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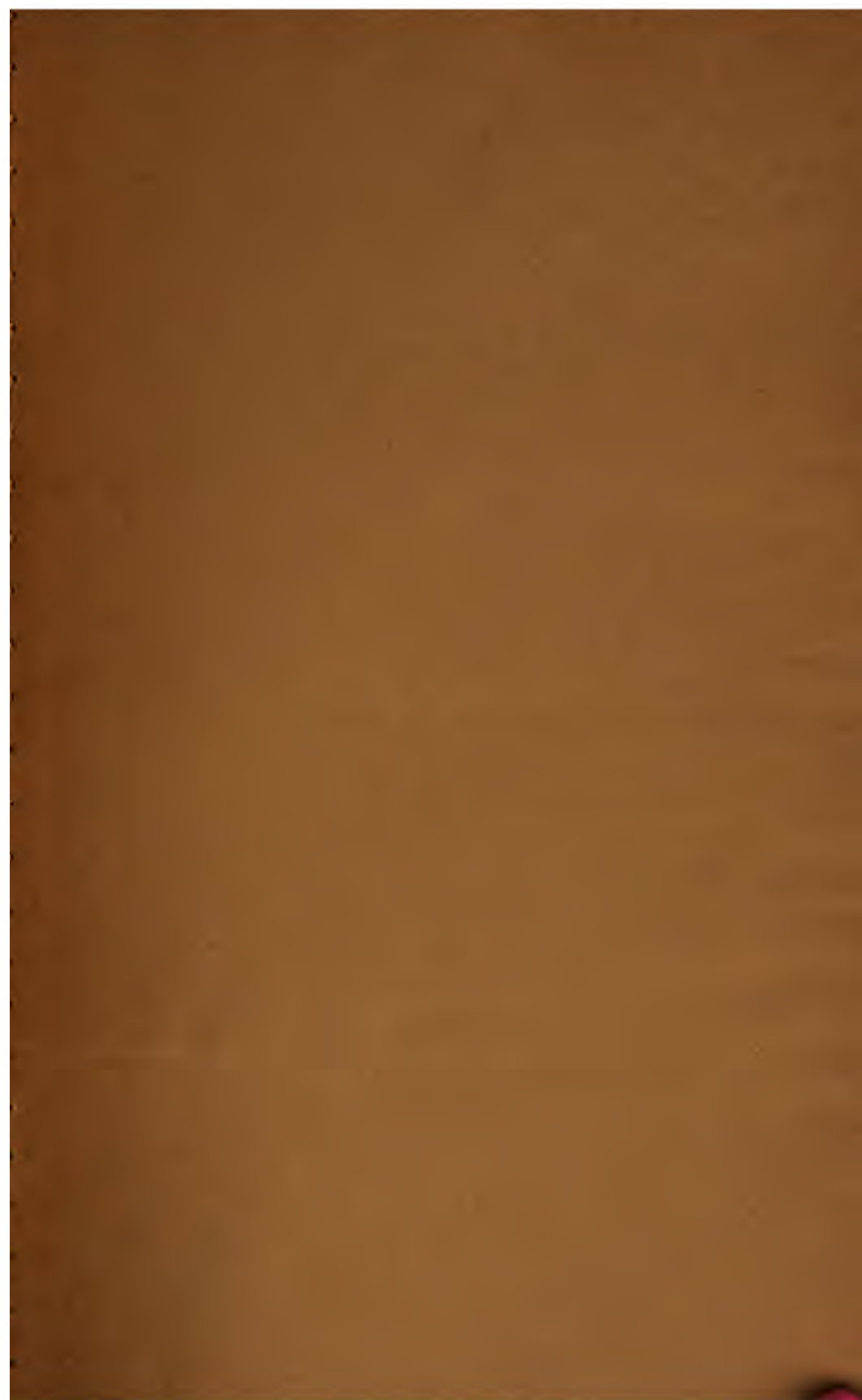
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HEALTH INSURANCE
ITS RELATION TO THE PUBLIC HEALTH

By

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[SECOND EDITION]

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CONTENTS.

	Page.
Introduction	5
I. Prevalence and cost of sickness among wageworkers	6
II. Conditions causing sickness among wageworkers	7
Occupational disease hazards.....	8
Harmful substances: Metals, dusts, gases, vapors, and fumes.....	8
Harmful conditions in places of employment.....	9
Working conditions which cause excessive fatigue.....	10
Morbidity according to occupation.....	12
Mortality according to occupation.....	14
Irregularity of employment.....	16
Effects of irregular employment upon health.....	16
Unemployment as a factor in the public health problem.....	17
Unhealthful conditions of living.....	18
Inadequate diet.....	19
Extent of inadequate diet.....	19
Effects of increased prices of food.....	20
Housing conditions.....	21
Congestion.....	21
Overcrowding and disease.....	22
Lodging-house conditions.....	23
Community environment.....	24
Effects of unfavorable community environment upon health.....	25
Infant mortality as an indicator of the healthfulness of environment.....	26
The employment of women.....	28
Effects of industrial occupation upon the health of women wageworkers.....	28
Causes of a greater health hazard to women wage earners.....	33
Effects of employment of mothers upon viability and health of children.....	33
Economic status of wage earners.....	34
Wages.....	35
Loss in working time.....	35
Annual earnings.....	35
Family income.....	35
Adequacy of wages and income.....	36
Poverty and disease.....	36
Partnership of poverty and disease.....	37
Poverty a result as well as a cause of disease.....	37
III. Responsibility for conditions causing disease	38
Causes of sickness from the standpoint of responsibility for their removal.....	38
Conditions for which employer and industry are primarily responsible.....	39
Conditions for which public is primarily responsible.....	40
Limitations upon responsibilities of employer and public.....	41
Conditions for which the individual worker is responsible.....	42

III. Responsibility for conditions causing disease—Continued.	Page.
Inability of wageworker to meet his responsibility for main- taining health.....	43
Adequacy of the wage earner's family income to maintain health	43
Handicaps of medical profession.....	46
Need for more effective method of dealing with problem of wage earner's health.....	47
IV. Cooperative action needed for relief and prevention of sickness.....	47
Cooperation among employers, employees, and public.....	48
Insurance a method of collective or cooperative action.....	48
Insurance as a preventive measure.....	49
Growth of social insurance.....	49
Growth of health insurance in Europe.....	50
Growth of health insurance in the United States.....	51
V. Health insurance: a health measure.....	53
Benefits	53
Extension of health insurance to all wage earners.....	54
Distribution of cost among employees, employers, and public....	55
The employees' share.....	56
The employers' share.....	56
The public's share.....	57
Health insurance as a health measure.....	57
Financial incentive for lessening ill health.....	57
Correlation of all health agencies.....	58
Medical staff detailed from Federal or State health de- partments.....	59
Cooperation with medical profession.....	59
Cooperation with local health agencies.....	60
Health insurance a health-promoting agency in foreign countries.....	61
Malingering.....	62
Incorrect principles employed in sick-benefit plans.....	63
Health insurance in relation to relief and charity work.....	64
Health insurance not a charity measure.....	64
A preventive of the need for charity.....	64
"Ethical character of insurance".....	65
Governmental system best.....	65
Basic principles of health insurance already established in the United States.....	67
A health insurance system feasible for the United States.....	68
Summary and conclusions.....	68
Appendix I. British and German health insurance systems.....	71
Appendix II. Typical sick-benefit funds in the United States.....	74
Appendix III. Health insurance standards recommended by the com- mittee on social insurance of the American Association for Labor Legislation	76
Appendix IV. Recommendations as to health insurance from the staff re- port to the United States Commission on Industrial Re- lations	78

HEALTH INSURANCE: ITS RELATION TO THE PUBLIC HEALTH.

By B. S. WARREN and EDGAR SYDENSTRICKER.

INTRODUCTION.

The growing realization of the fact that the health of the wage-working population depends in large measure upon economic conditions is leading to the conviction that there is need for more comprehensive measures for the relief and prevention of disease. The presence of a wage-working population in almost every community renders this problem a national as well as a local one. As the industrial population of the United States increases, the need for an adequate solution of the problem becomes more pressing.

Health insurance has been adopted in many European countries as the remedy for similar conditions and has become an efficient measure for the relief of sickness and an important agency in the prevention of disease. Recent discussions and proposals of health-insurance measures are beginning to focus public attention upon this subject and to suggest that a governmental system of health insurance is the solution of the problem in America. Its success in foreign countries at least demands a careful consideration of its possibilities as a health measure in this country.

Health insurance, in its broad sense, has two definite objects: (1) To distribute the cost of sickness among those responsible for conditions causing sickness and thereby lighten the burden upon the individual; and (2) to give a financial incentive for the prevention of sickness to those who are responsible by dividing the premiums among the responsible groups. If such a method can be adapted to American conditions, and if in its administration the cooperation of all concerned in the relief and prevention of sickness can be brought about, there is reason to believe that it will prove to be a public-health measure of extraordinary value.

This bulletin is intended as a brief survey of the relation of health insurance to the health of the wage earner. Obviously, therefore, it is necessary (1) to outline the conditions causing sickness among wage earners; (2) to point out the responsibility of employers, employees, and the public for these conditions; (3) to show the necessity

for closer cooperation among the responsible groups; and (4) to discuss the adequacy of health insurance as a method for their cooperation in promoting the health of wage earners and their families. In discussing these subjects it should be noted that mortality and morbidity statistics have not been used to measure the relative importance of economic factors, but to indicate their trend and their effects.

As a basis for considering the relation of health insurance to the health of the wage-working population, a review of the situation which needs to be remedied is given first consideration.

I. PREVALENCE AND COST OF SICKNESS AMONG WAGE-WORKERS.

The cost to the Nation of preventable diseases has frequently been the subject of estimates and discussions. These estimates include the entire population, and even if reduced by one-half are still appallingly great. As a basis, however, for a clearer understanding of the problem of health among wageworkers and their families, it is important to have some idea of its magnitude in more specific terms.

It has been tentatively stated that each of the 30,000,000 workers in the United States loses on the average about nine days every year on account of sickness alone. This does not take into consideration the effects of sickness upon his own vigor and efficiency, or upon the welfare of his family, or upon the efficiency of the industry in which he is engaged. The estimate of nine days is a preliminary one based upon an investigation made for the United States Commission on Industrial Relations of nearly a million workers in representative establishments and occupations in this country. While the more complete statistics that are now being compiled may cause some revision of this estimate, it is interesting to note that it very nearly coincides with the German and English figures for over 26,000,000 industrial workers, which show an average of eight to nine days of illness per year through a number of years. Estimating the daily wage at \$2 and the cost of medical attention at \$1 per day, the annual loss to the 30,000,000 wage earners on account of the nine days of sickness would be over \$800,000,000. This leaves out of consideration the losses due to death and to decrease in efficiency which follows illness. It also leaves out of consideration the effect upon the family when the breadwinner is disabled.

These figures, impressive as they are, but inadequately afford a true conception of the problem of sickness among wageworkers; they merely give an idea of its magnitude in terms of economic significance. To be properly appreciated, they must be interpreted in terms of human suffering. Several intensive physical examinations

of workers in recent years in the United States have afforded definite data on the prevalence of ill health, and especially tuberculosis, in certain occupations. Miller's examination of 200 printers in 1908 showed that 69 per cent were afflicted with one or more diseases and that 16.7 per cent had tuberculosis.¹ Similar examinations by Dr. George M. Price, Director of Investigation for the New York State Factory Investigating Commission, showed the following results.²

TABLE 1.—*Diseases among workers in New York State.*

Group of workers.	Total number examined.	Per cent having one or more diseases.	Per cent having tuberculosis.
Bakers.....	800	57.0	2.4
Tailors.....	800	62.7	1.6
Furriers.....	83	86.2	6.0
Tobacco workers.....	600	71.3	1.3

The results of physical examinations of about 2,000 male garment workers in New York City, conducted on a more intensive plan by Surg. J. W. Schereschewsky, of the United States Public Health Service, showed that 2.4 per cent of the operators, 3.4 per cent of the pressers, and 4.6 per cent of the finishers had tuberculosis.³ The examination of over 7,000 employees of the Sears, Roebuck & Co., in Chicago, by Dr. H. E. Mock, during a period of five years, showed a tuberculosis rate of 4 per cent.⁴ Mock's method of examination was similar to that of Schereschewsky. The examination of about 20,000 workers in various industries in Cincinnati by Surg. D. E. Robinson, of the United States Public Health Service, showed a tuberculosis rate of 1.1 per cent⁵.

II. CONDITIONS CAUSING SICKNESS AMONG WAGE-WORKERS.

The problem of the wageworkers' health is made more complex on account of economic factors. The "human scrap heap of industry" is not an imagined thing, but represents a very real and constant loss of industrial efficiency and waste of health and life that ought to be prevented.

¹ These statistics were presented by Dr. James Alexander Miller at the International Congress on Tuberculosis in 1908. Quoted by Dr. George M. Price, M. D.: *Occupational Diseases and the Physical Examination of Workers*, Transactions of the Fifteenth International Congress on Hygiene and Demography, Washington, 1912, Vol. III, Part II, pp. 845, 847.

² *Supra* *cit.*, p. 847. The women tobacco workers were examined by Dr. Fanny Dembo.

³ Public Health Bulletin No. 71, United States Public Health Service, p. 84. The workers included in Dr. Schereschewsky's examination were those who volunteered.

⁴ H. E. Mock, M. D.: *An Efficient System of Medical Examination of Employees*, Transactions of the Tenth Annual Meeting of the National Association for the Study and Prevention of Tuberculosis, Washington, D. C., 1914, p. 44.

⁵ Public Health Bulletin No. 73, United States Public Health Service, p. 58.

Among the more important economic factors which affect the health of the wageworking population may be mentioned the following:

1. The occupational hazards of disease.
2. Irregularity of employment.
3. Unhealthful conditions of living.
4. The employment of women in industry under modern conditions of work, particularly of married women.
5. The economic disadvantage at which a large proportion of wage-workers and their families are placed as the result of low wages and insufficient annual income.

OCCUPATIONAL DISEASE HAZARDS.

There is no longer any doubt that modern industry is responsible for a considerable proportion of workingmen's physical ills. How far other conditions, such as character of diet and home and community environment, are predisposing or aggravating factors in "occupational" diseases is impossible of exact determination. There are, however, certain specific substances and conditions in places of employment and certain conditions of employment which undoubtedly have harmful effects upon the health of many workers. These facts are becoming widely recognized in the enactment of legislation intended to decrease these health hazards.

A large number of diseases have been traced more or less directly to the occupation. The tendency, however, in recent years has been to define these diseases as "industrial" rather than as "occupational." For, as defined in a memorial to the President of the United States by a committee of experts in 1910, industrial diseases are the "morbid results of occupational activity traceable to specific causes and labor conditions, and followed by more or less extended incapacity for work."¹ It is not practicable to give here a list of the industrial diseases or to enumerate the harmful substances or conditions which cause them; but the following brief outline of a classification according to special causes suggests some idea of their extent and prevalence:

A. Workers in harmful substances: Metals, dusts, gases, vapors, and fumes.

B. Workers under harmful conditions: Heat, moisture, cold, confined air (all bad ventilation), overcrowding, compressed air, excessive light, strains of muscles, nerves, or special senses, and the like.

Harmful substances: Metals, dusts, gases, vapors, and fumes.—The character and to some degree the extent of the disease hazard caused by poisons, gases, fumes, dusts, etc., in certain occupations have been

¹ American Labor Legislation Review, Vol. I, No. 1, p. 125.

shown in several important investigations made in recent years by the Federal and State Governments and in recent contributions to the literature on occupational diseases and hazards.¹ Phosphorus, lead, mercury, and arsenic poisonings are but familiar examples; there are so many diseases that have been found to result from poisons which affect workers in scores of occupations that "there is scarcely any one line of modern manufacture which is free from the dangers of industrial poisoning."² These conditions are now so generally accepted as serious occupational hazards that it is not necessary to do more than refer to them here.

Harmful conditions in places of employment.—In spite of the movement for better conditions in factories, stores, and mills it appears from recent reports that a very large proportion of the industrial establishments in this country are not free from unhygienic conditions. The report of the New York Factory Investigating Commission of its extensive examination of establishments in the State of New York pointed out that while in many of the establishments the conditions were found to be excellent and the managements exercised a proper care over the health of their employees, "unfortunately such model establishments and such enlightened employers are in the minority," and "investigations in a great number of factories throughout the State have revealed much that is deplorable."³ The sanitary survey of the State of Louisiana, so far as its results have been published, indicated that over 50 per cent of all of the establishments in

¹ Space does not permit a discussion of the results of these investigations in this brief survey, but reference is especially made to the following literature on the subject of occupational diseases which treat of specific occupations and occupational hazards: Henry Japp: Calson Disease and Its Prevention, Transactions of the Fifteenth International Congress on Hygiene and Demography, Vol. III, Part II, p. 639; John B. Andrews: Phosphorus Poisoning in the Match Industry of the United States, U. S. Bureau of Labor Bulletin No. 86; Mrs. L. W. Bates: Mercury Poisoning in the Industries of New York City; C. T. Graham-Rogers: Ninth Annual Report of the New York Commissioner of Labor, Appendix II, pp. 68-91 (calico print industry and potteries), and Tenth Annual Report of the New York Commissioner of Labor, Appendix II, pp. 62-111 (phosphorus match industry); Emery R. Hayhurst: Report of Illinois Commission on Occupational Diseases, 1911, pp. 49-84 (Investigation of brass manufacturing industry in Chicago); Alice Hamilton: White Lead Industry in the United States, U. S. Bureau of Labor Bulletin No. 95, pp. 189-259; Report on Investigations of the Lead Troubles in Illinois from the Hygienic Standpoint, in report of the Illinois Commission on Occupational Diseases, 1911, pp. 21-49; Lead Poisoning in the Smelting and Refining of Lead, U. S. Bureau of Labor Statistics Bulletin No. 141.

² I. M. Rubinow: Social Insurance, p. 212. See also Bulletins of the United States Bureau of Labor Statistics, Nos. 86 and 100, for groups of industrial poisons.

³ New York Factory Investigating Commission; Second Report, 1913, Vol. II, Report of Dr. George M. Price, Director of Investigation, p. 416. Dr. Price said:

"Unfortunately, such model establishments and such enlightened employers are in the minority, as by far the greater number of employers have not yet awakened to the importance of improving conditions of labor. Investigations in a great number of factories throughout the State have revealed much that is deplorable. In the production of commodities, great economy must needs be practiced as a matter of course. But there is a tendency on the part of many employers to economize not only in matters of legitimate expense, but also in space, light, air, and certain other safeguards to the health and lives of the workers. Such false economy inevitably injures the employer and imperils the health and lives of his employees."

the State were in "poor" or "bad" condition.¹ The recent survey of industrial health hazards in establishments in Ohio found that exposure to certain hazards classified as "bad," from the standpoint of sanitation and hygiene, existed in a very considerable proportion of establishments.² Sanitary surveys made for the Federal Commission on Industrial Relations by the United States Public Health Service in 10 typical industries in seven different States showed that conditions were about the same as those reported for New York, Louisiana, and Ohio.³ These conditions are probably typical for most industrial localities in the United States and would seem to indicate that much remains to be done before the industrial disease hazards due to these conditions are reduced to a minimum.

Working conditions which cause excessive fatigue.—In addition to industrial poisons and other insanitary conditions in places of work, there are certain conditions in modern industry which cause excessive fatigue. Among these may be mentioned long hours, the piecework system, and the increasing use of machine methods. Work performed by any of the body cells produces waste products and other changes in those cells. Up to a certain limit work, with the resulting cell changes, is beneficial and improves the physical condition; but when work is excessive, too prolonged, or too fast, the waste products begin to accumulate, the cells become exhausted, the physiologic changes fail to occur, and if not properly rested the cells are damaged.

It is becoming more and more clearly recognized that fatigue is a health hazard in industry. This is evidenced by a series of court decisions in the last few years upholding the constitutionality of laws prohibiting excessive hours of work for women in industry. The

¹ Louisiana State Board of Health: Quarterly Bulletin, Mar. 1, 1914.

² E. R. Hayhurst, M. D.: A Survey of Industrial Health Hazards and Occupational Diseases in Ohio, Ohio State Board of Health, 1915, p. 118. The following recapitulation of various health hazards shows the percentage of work places where the exposure was classified as "bad":

Specific health hazard.	Per cent of work places where exposure to health hazard was found to be "bad."	Specific health hazard.	Per cent of work places where exposure to health hazard was found to be "bad."
Dust.....	16	Heat.....	4
Dirt.....	21	Cold.....	2
Dampness.....	1	Infections (communicable diseases)....	41
Darkness.....	10	Poisons.....	19
Air.....	18		

Included in "infections," in the above recapitulation, are particularly the dangers from promiscuous spitting upon floors in work places by persons who are employed without physical examination and who work without medical supervision (p. 119).

³ The 10 industries surveyed were in the following States: Massachusetts, New Jersey, Pennsylvania, Indiana, Illinois, Michigan, and Minnesota.

basis of these decisions was the effects of long hours upon health.¹ There is also a marked tendency on the part of employers to realize these effects² and to adopt a shorter working day and on the part of labor unions to insist upon an eight-hour day and a six-day-week standard. In spite of this tendency a very large proportion of wage-workers are working 60 or more hours per week and many without a "one day rest in seven." According to the Federal Bureau of Labor Statistics' latest data the 84-hour and 7-day week were prevalent in some departments of the iron and steel industry. Nearly two-thirds of the blast-furnace workers, for example, in the plants for which data were secured were in 1913 on an 84-hours-per-week basis, and the customary working time for over three-fourths of the workers in this department was seven days a week.³ In coal mining, according to the reports of the U. S. Geological Survey for 1914, nearly 40 per cent of the bituminous workers were subject to a nine or ten hour day.⁴ In the Michigan copper mines it was found by a Federal investigation that the 10-hour day prevailed.⁵ According to the 1910 census three-fourths of the workers in slaughtering plants, nearly one-half of cotton-mill, hosiery and knit goods, and leather workers had a working day of 10 hours or longer.⁶

¹ The statement of Justice Ingraham of the Court of Appeals of New York in the case of *The People v. The Charles Schweinler Press* explained in some detail the reason why the court reversed a former decision on a similar case. This reason was stated to be the fact that in the former decision no definite facts as to the effects of night work upon the health of women were presented, whereas in the latter case the court had before it the results of various investigations and opinions of medical and other experts. See also Supreme Court of the United States, October term, 1907, *Curt Miller v. State of Oregon*; *Ritchie & Company v. Wayman*, 244 Illinois, 509 (1910). For a review of judicial decisions dealing with hours of labor for adult men see Bulletin of the New York State Department of Labor, No. 46, March, 1911.

² An opinion as to these effects is seen in the report of the committee of stockholders of the United States Steel Corporation, consisting of five prominent stockholders, submitted in April, 1912, which stated "Whether viewed from the physical, social, or moral point of view, we believe that the seven-day week is detrimental to those engaged in it. * * * We are of the opinion that a 12-hour day of labor followed continuously by any group of men for any considerable number of years means a decreasing of the efficiency and lessening of the vigor and virility of such men." Quoted from original report by the United States Department of Commerce and Labor in Report on Conditions of Employment in the Iron and Steel Industry, Vol. III, p. 161. (S. Doc. No. 110, 62d Cong., 1st sess.)

³ The Bureau of Labor Statistics data for workers in the nine principal departments in the iron and steel industry are summarized in the following table:

[United States Department of Labor, Bureau of Labor Statistics: Bulletin No. 168, pp. 10-13.]

Departments.	Per cent of employees whose—		Departments.	Per cent of employees whose—	
	Full-time hours per week were 84 hours.	Customary working time per week was 7 days.		Full-time hours per week were 84 hours.	Customary working time per week was 7 days.
Blast furnaces.....	62.6	79.8	Standard-rail mills.....	1.5	2.0
Open-hearth furnaces.....	30.5	34.2	Bar mills.....	.2	.6
Bessemer converters.....	10.0	10.8	Sheet mills.....		.3
Blooming mills.....	8.3	12.0	Tin-plate mills.....		
Plate mills.....	2.2	7.1			

⁴ United States Geological Survey: Coal Production in the United States, 1914, p. 617.

⁵ United States Commissioner of Labor Statistics: Report on the Michigan Copper Mines Strike. (S. Doc. No. 381, 63d Cong., 2d sess.)

⁶ Thirteenth Census of the United States, Vol. X. See bulletins of the Department of Labor, Bureau of Labor Statistics, on wages and hours in various industries.

The overstrain incident to the piecework system has been found by a number of investigations to be deleterious to the workers' health. Dr. A. J. Lanza, who made physical examinations of shovelers in the zinc mines of the Joplin district, Missouri, states:

They had shoveled from two to six years; some had started when 18 or 19 years of age. Now they could shovel only 35 or 40 cans, where formerly they could shovel 60 to 70 and upward. Hard, constant work had broken these men down, so that at the ages of 22 to 30 they were already on the down grade * * *. Working thus at their full earning capacity day in and day out, it is not surprising that with the added exposure to rock dust these men should contract tuberculosis to an excessive degree. Especially must this be true when they start in while under age and before their bodies have fully developed.¹

The physical examinations of garment workers in New York City conducted by the United States Public Health Service showed that overstrain was more prevalent in occupations where wages are paid on a piece basis than in occupations where wages are paid on a week or other time basis.²

With the increased use of machinery another serious health hazard has appeared. This is the so-called "new strain" in modern industrial methods. In the opinion of many observers and authorities,³ it is the fatiguing effects upon the worker of mechanical processes and of the increasingly mechanical character of this work. The effects of the greater speed made possible by machine methods are frequently aggravated by the speeding-up practices in many establishments. The extreme specialization in the modern factory has resulted in a monotony of attention and muscular action that imposes a condition of permanent strain upon one set of nerve centers or muscles. Noise and mechanical rhythm have been found to produce injurious effects upon the nervous system and special senses.

These occupational hazards are causing disease; just how much investigators have been unable to determine, but sufficient research has been made to know that they are prominent factors. The extent of their influence is indicated by the morbidity and mortality rates among workers according to occupation.

Morbidity according to occupation.—All records of morbidity according to occupation indicate that the health hazard is greater in some occupations than in others. Occupation is recognized as one of the three variables by life insurance companies in the United States in fixing their rates for health insurance; the other variables are age and sex. The health insurance issued by the Metropolitan Life In-

¹ U. S. Bureau of Mines, Technical Paper 105: Pulmonary Disease Among Miners in the Joplin District, Missouri, and its Relation to Rock Dust in the Mines. A Preliminary Report, by A. J. Lanza and Edwin Higgins, 1915, pp. 38-39.

² U. S. Public Health Service, Public Health Bulletin No. 71, May, 1915: Studies in Vocational Diseases—I. The Health of Garment Workers, by J. W. Schereschewsky, Surgeon U. S. Public Health Service, p. 79.

³ Goldmark: Fatigue and Efficiency, Part I, pp. 43-89, and Part II, pp. 26-52. In this volume are collected much of the principal authoritative data from European, British, and American publications bearing on this point.

insurance Co., for example, has rates which vary so greatly according to occupation that the rates for certain occupations regarded as hazardous to health are double those for the least hazardous occupations. The records of European sickness insurance societies and systems afford abundant evidence of the occupational differences in health hazard. The well-known Leipzig statistics showed that the number of days of sickness per person per annum varied from 4 for clerks and salesmen in shops to 15.7 for cardboard and paper-box factory workers.¹

The extensive collection of statistics by the Austrian Government for members of sick-benefit societies covering a period of five years showed high morbidity rates among textile, clothing, sugar, and chemical factory workers and printers and metal workers as compared with commercial employees.²

¹ These statistics were presented by Mr. Lee K. Frankel, sixth vice president of the Metropolitan Life Insurance Co. of New York, in an address before the Detroit conference, Sept. 4, 1913, on "Occupational Hygiene." From them the following table is compiled, showing the sickness experience of the Leipzig Society from 1887 to 1904 for males in a number of important occupations.

Occupation.	Number of days of sickness per annum per member: Males.	Occupation.	Number of days of sickness per annum per member: Males.
Clerks and salesmen in shops.....	4.00	Brewers and malsters.....	11.06
Bookkeepers and office employees.....	5.11	Hatters.....	11.24
Butchers and slaughterhouse workers..	5.77	Iron foundries and machinists.....	11.89
Furriers and fur dyers.....	7.36	Polishers and metal grinders.....	12.15
Paper-goods factory workers.....	8.27	Iron and steel mill workers.....	12.56
Printers and printers' helpers.....	8.51	Marble cutters.....	12.94
Tobacco and cigar workers.....	9.09	Refiners in sugar factories.....	14.43
Workers in chemical industries.....	9.47	Quarrymen and stone breakers.....	14.96
Painters and decorators.....	10.17	Cardboard and paper-box factory workers.....	15.74

² The following tabulation, compiled from the Austrian statistics referred to above, shows the days of sickness per person per annum for male workers in certain groups of occupations and of industries. The average number of days of sickness for each occupational or industrial group for all ages is given, as well as the average age of persons included, and the average number of days of sickness according to specified age periods.

Days of sickness per person per annum in Austrian sickness insurance funds, 1891-1895, by specified age groups according to occupation or industry: Males.

Age group.	Commercial employees.	Butchers.	Textile factories.	Clothing factories.	Bakers and confectioners.	Sugar factories.	Chemical factories.	Printers.	Metal and iron-ware factories.	Smelting works, rolling mills, etc.
All ages.....	4.0	5.0	6.9	7.2	7.8	9.1	10.1	10.1	11.1	11.8
16-20.....	3.5	4.4	6.4	5.2	6.4	7.9	9.9	9.5	9.4	10.8
21-25.....	3.8	4.7	6.0	5.4	7.2	8.5	9.3	9.4	9.2	11.2
26-30.....	3.6	5.3	5.6	6.0	6.3	8.3	9.2	9.5	9.7	11.0
31-35.....	3.9	5.7	5.7	6.5	6.4	8.6	8.6	9.3	9.7	10.8
36-40.....	4.1	5.9	6.1	7.5	8.0	8.6	8.6	9.2	10.6	10.3
41-45.....	4.7	5.9	7.0	7.7	10.1	9.4	10.4	8.4	12.5	11.7
46-50.....	5.1	8.5	8.0	9.8	11.2	9.7	10.2	11.0	14.5	12.7
51-55.....	5.7	6.9	8.9	10.1	15.9	11.0	12.1	16.0	15.8	14.5
56-60.....	7.2	6.1	10.5	13.1	20.5	13.5	16.5	16.8	19.7	18.2
61-65.....	11.9	8.4	13.9	13.4	25.1	16.1	22.8	14.7	20.5	20.5
Average age.....	29.3	25.9	32.2	33.4	28.8	33.5	34.3	32.2	31.3	33.4

Antliche Nachrichten betr. Unfall- und Krankenversicherung, 1900.

Twenty-fourth Annual Report of the United States Commissioner of Labor: Workmen's Insurance and Compensation Systems in Europe, Vol. I, pp. 380-393.

Official records for 1914 of the time lost on account of sickness by over 12,000 male office employees of the Federal Government in Washington show an average of 4.82 days. This rate is in sharp contrast to an average of 11.6 days lost during 1913 on account of sickness by employees of a large railroad system in the United States, whose occupations were very different from that of the Government employees. Sickness statistics for 5,600 employees of a large steel company in Ohio illustrate the differences in health hazard, according to occupation, in a single establishment. The average of all of its employees sick during a period of 38 months was 8.2 per cent, as compared with 2.37 per cent of the electrical workers and 13.4 per cent of the blast-furnace workers.¹

Mortality according to occupation.—Occupational health hazards are indicated not only by statistics of morbidity but also by statistics of mortality. The German and Austrian records already referred to furnish ample evidence of greater mortality in certain occupations than in others. Bertillon, in a careful synthesis of English, French, Swiss, Scotch, Vienna, and Leipzig statistics, found that the occupations in which the death rate was highest were those in which the workman was exposed to a poison, either alcohol or lead; that several occupations with a high death rate were characterized by exposure to hard dust, mineral or animal; and that occupations in which the worker was exposed to inclement weather while unable to exercise had a high mortality.²

For the purpose of comparing occupational health hazards the tuberculosis death rate is often used. It is probably the best single indicator we have for this purpose. The census mortality statistics for 1909 showed that for all occupations reported, tuberculosis caused 14.8 per cent of all deaths among males, as compared with 6.6 per cent of all deaths among farmers, planters, and overseers, 28.6 per

¹ E. R. Hayhurst, M. D.: A Survey of Industrial Health Hazards and Occupational Diseases in Ohio, Ohio State Board of Health, 1915, p. 58.

The statistics for some of the principal occupations in this steel plant are summarized in the following tabulation. It should be noted that accidents and venereal diseases were excluded from the statistics of sickness, as well as all cases where the illness was less than a week in duration. Sanitary conditions in this plant were pronounced to be exceptionally good.

Average per cent of employees of a steel mill sick during a period of three years, 1911-1913, by occupations: Males.

Departments.	Average per cent sick.	Departments.	Average per cent sick.
Electrical	2.37	Pipe mill	9.18
Bricklayers	3.66	Shelf mills	9.56
Open hearth	4.81	Mechanical	10.09
Yard labor	6.13	Blast furnaces	13.41

² Dr. Jacques Bertillon: Mortality and the Causes of Death According to Occupations. Transactions of the Fifteenth International Congress on Hygiene and Demography, Washington, D. C., 1912. Vol. I, Part II, p. 369.

cent among marble and stone cutters, and 29.2 per cent among printers, lithographers, and pressmen.¹

These statistics do not vary greatly from the actuarial experience of the Prudential Life Insurance Co.² A recent industrial survey of industrial health hazards in Ohio showed that while only 13 per cent of the deaths of all industrial workers for the years 1910-1912 were due to tuberculosis, 32 per cent of the deaths of brass workers, 18 per cent of molders, 24 per cent of brewery workers, 27 per cent of marble and stone cutters, 25 per cent of boot and shoe workers, and 21 per cent of glass workers were due to this disease.³

At the Butte, Mont., hearings of the Federal Commission on Industrial Relations statistics were presented showing that 38 per cent of all deaths of copper miners in that locality were caused by tuberculosis. This extremely high rate was stated to be due largely to cer-

¹ The following table compiled from the U. S. Census, Mortality Statistics, 1909, indicates the proportionate mortality from tuberculosis for several important occupations. It should be noted that the proportionate mortality from accidents in the occupations named is in every instance except two (iron and steel workers and agricultural workers) below the average for all occupations.

Death rate from tuberculosis per 100 deaths from all causes among males in specified occupations, for all ages and for specified age groups.

Occupation.	All ages.	20-24	25-34	35-44
All occupations.....	14.8	31.7	31.0	23.6
Farmers, planters, and overseers.....	6.6	26.5	24.9	18.8
Carpenters and joiners.....	10.1	31.2	26.0	22.5
Agricultural laborers.....	14.5	29.2	28.6	20.0
Iron and steel workers.....	16.3	21.6	25.2	22.0
Painters, glaziers, vafnshers.....	18.9	41.0	37.2	28.4
Cotton mill operatives.....	21.1	48.8	37.8	27.1
Tobacco and cigar factory operatives.....	24.3	57.1	49.3	33.7
Clerks and copyists.....	28.3	44.7	44.2	31.5
Marble and stone cutters.....	28.6	19.0	46.7	41.0
Printers, lithographers, and pressmen.....	29.2	47.6	51.5	32.6

² Frederick L. Hoffman: Industrial Accidents and Trade Diseases in the United States. Transactions of the Fifteenth International Congress on Hygiene and Demography, Washington, D. C., 1912, Vol. I, Part II, p. 802. Mr. Hoffman presented statistics from the mortality experience of the Prudential Co., from which the following tabulation is compiled:

Proportionate mortality from tuberculosis of the lungs, 1907-1910, of occupied males in certain occupations, by specified age periods.

Occupation.	Per cent.			Occupation.	Per cent.		
	15 years and over.	15 to 24 years.	25 to 44 years.		15 years and over.	15 to 24 years.	25 to 44 years.
All occupied males.....	21.4	34.3	37.7	Cigar makers.....	26.3	54.8	45.0
Farmers.....	9.9	26.9	32.1	Machinists.....	27.0	39.3	40.0
Tailors.....	15.2	52.0	47.5	Textile workers.....	27.3	38.6	45.5
Carpenters.....	15.6	32.0	38.4	Bartenders.....	30.7	34.1	35.7
Masons.....	17.5	31.1	39.0	Plumbers.....	32.6	32.8	41.7
Bakers.....	19.2	24.1	37.2	Glass workers.....	32.9	38.5	48.1
Iron and steel workers.....	19.3	27.9	29.7	Stone workers.....	33.5	33.3	47.8
Painters.....	23.3	34.7	39.2	Clerks.....	35.5	42.4	44.8
				Printers.....	37.7	48.4	48.6

³ Hayhurst, E. R., *supra cit.*, pp. 61, 66, 70, 80, 84, and 88.

tain definite working conditions in the copper mines, such as dust, heat, humidity, gases, and continuous (seven days a week) work, which lowered the resistance of the miners to the disease. According to an investigation conducted by the United States Bureau of Mines, similar conditions were found to prevail in the zinc-lead mines of the Joplin (Mo.) district.¹

IRREGULARITY OF EMPLOYMENT.

Irregular employment in its relation to industry has been the subject of many investigations. Though these investigations have been made with other purposes in mind, they have shown that irregular employment has a very definite relation to the health of the workers both as a cause and effect of sickness.

Effects of irregular employment upon health.—The actual effects of irregular employment upon the health of workers, as observed by physicians and students of industrial conditions, are so familiar that they need not be discussed here at any length. The very fact that the income of a worker is uncertain has been found to be a cause of impaired physical efficiency. The detailed examination of male garment workers in New York City by Schereschewsky afforded the basis for the following conclusion:²

During the busy season the workers drive themselves at top speed in order to earn as much money as possible, to tide them over the slack seasons, while, during the dull periods, they are without sufficient occupation to keep up their interest. Such conditions are productive of considerable mental stress, the worker during the busy season overdriving himself and spending the slack season in wondering if work will be forthcoming in the future. This condition of affairs is reflected in the relatively large number of operators found to be distinctly neurasthenic or of neurasthenic tendency.

Similar conclusions were indicated by Schwab's investigation of garment workers in St. Louis.³

The effects of irregular employment are not limited to the physical impairment caused by worry and periodic overdriving. The lessened opportunity to earn wages caused by irregular employment or by physical disability means a smaller income and therefore a lessened ability to maintain a healthful standard of living. The earnings of workers whose rates of pay would be adequate to provide for healthful conditions of living if they could work steadily are often so reduced by irregular employment that a condition of poverty is the result. In many instances the unemployed worker is forced into a lower level of occupation. The unemployed worker is likely to take any job that he can get in order to provide the bare necessities of life,

¹ United States Bureau of Mines: Technical Paper No. 105, *supra cit.*, p. 42.

² J. W. Schereschewsky: Some Physical Characteristics of Male Garment Workers of the Cloak and Suit Trades, Based Upon 2,107 Physical Examinations Made in New York, N. Y. American Journal of Public Health, July, 1915.

³ Sidney I. Schwab: Neurasthenia Among Garment Workers, American Labor Legislation Review (January, 1911), p. 27.

and the tendency is for him to drift into the "floating" or "casual" labor class. The casual laborers at the docks in New York City are composed largely of workers who have gradually lost their economic status in industry, and the dock worker continues to slip down in the industrial scale until he reaches the class of "shenangoes," the down-and-out longshoremen who are capable of only light work and who finally become burdens upon public and private charity. According to testimony before the United States Commission on Industrial Relations, most of the 7,000 applicants for work at the San Francisco Cooperative Employment Bureau were of the casual labor class, and one-half of the total number of applicants were found to be incapacitated for work on account of poor nutrition, disease, and exposure.¹ The records of many investigators of the unemployed abound with similar instances.

Where the wageworker is the breadwinner of a family, the loss of his earnings occasioned by irregular employment or by his drop into a poorer paid occupation can not but have serious effects upon the health of the family. Either the family is forced into that class whose income is insufficient to maintain a healthful standard of living or the wife is compelled to become a wage earner in order to supplement the family income. Either of these conditions has serious consequences from the standpoint of health.

Unemployment as a factor in the public health problem.—There can be no doubt, therefore, that irregularity of employment as a condition which affects the wageworker's efficiency and the standard of living of his family is fundamentally related to the relief and prevention of disease among the industrial population. In the light of these considerations, irregularity of employment takes on a new significance for public health agencies. The very fact that many wageworkers grow old, in the physiological sense of the term, earlier than persons engaged in other pursuits and the fact that modern industry has little use for the man over 45 years of age are considerations that involve the question of health in the problem of unemployment. When it is remembered that much unemployment is due to sickness, then irregularity of employment becomes a health problem that is serious in itself.

This phase of the public health problem not only concerns the State or the Nation as a whole, but it confronts every industrial community. The familiar statements and statistics of unemployment which almost annually appear from industrial centers and large urban localities are capable of an interpretation which is very significant from the standpoint of prevention of sickness. From the

¹ Testimony of H. R. Bogart, secretary of the Associated Charities of San Francisco, before the United States Commission on Industrial Relations, public hearings on the seasonal labor problem in California.

comments of municipal health agencies, the following is selected as one which exhibits clearly a realization of the connection, in a single community, between the public health situation and the economic factor of unemployment:¹

There is evidence in many directions that the tremendous amount of unemployment at present (January, 1915) existing is steadily undermining the health of the people. This lack of employment with its consequent poverty and destitution, brings about lowered vitality in its victims, weakens their resisting power, and lessens their immunity to disease.

It should be remembered that in addition to the irregularity of work occasioned by the practices and methods of industry, there are annually recurring seasons of unemployment, as well as even more intense periods of unemployment in times of industrial depression. The factor of irregularity of employment is thus one which not only is present to some extent all of the time, but which varies in its importance from season to season and from year to year.

UNHEALTHFUL CONDITIONS OF LIVING.

It is well recognized that the unfavorable conditions under which a large proportion of wageworkers and their families live constitute a baffling problem in the treatment of the sick and in the prevention of disease. Yet the larger aspect of this phase of the question does not appear until the great extent of these unfavorable conditions is realized.

The great size of New York City and its proportionately great number of ill-fed and poorly housed working people have naturally concentrated attention on the problem there more than in other centers; but it has been found that living conditions of wage earners and their families are as bad in smaller industrial centers and in some instances appreciably worse. Progress in municipal health work has been greater in the large urban centers than in the smaller towns. The latter are just beginning to realize that they have a health problem. Furthermore, it should be remembered that the great majority of American wage earners live in the middle-sized and smaller places.

Under existing conditions the reason for unhealthful modes of living is largely an economic one. Since these conditions have been found to be intimately connected with the incidence of disease, they constitute a factor in the problem of the wageworker's health whose significance is plainly evident. It is worth while to review some of the more significant facts, in order to illustrate this phase of the subject.

1. Inadequate diet.
2. Housing conditions.
3. Community environment.

¹ Toronto Health Bulletin for January, 1915.

Inadequate diet.—The frequent lack of a properly balanced and adequate diet among wageworkers and their families is a factor entering into the problem of their health which has probably been noted by nearly every physician and health and charity worker. The recent findings of Goldberger show clearly that an unbalanced diet causes pellagra, a disease which is found more frequently among low-paid workers than among the well to do. Furthermore, while diet is not a specific factor in the causation of tuberculosis, as in pellagra, the undernourished prove easy victims to the tubercle bacillus. A committee of the American Association for Labor Legislation has stated:¹

With insufficient wages, food is cut down below the level of subsistence. In order to meet expenses for lodging and clothing, working women reduce their diet to the lowest possible point. Health inevitably suffers.

Nearly every investigation by minimum wage commissions has shown that a very large proportion of the independent women workers in all sections of the country are unable to provide enough food and the right kind of food on the wages they receive, and proper subsistence has been thoroughly established as one of the fundamental considerations in the fixing of minimum wages in a number of States.

Extent of inadequate diet.—Income statistics published by the Federal and State Governments in the last few years indicate that a considerable proportion of the families of wageworkers have not been able to maintain a diet that will provide for proper nourishment. A larger proportion can maintain an adequate diet only at the sacrifice of healthful environment and of other items which go to constitute a reasonable standard of living. There can be no doubt that nourishing food is sacrificed in a large number of instances in order to obtain some of the comforts and amusements and to gratify some of the wants which are entirely natural and to be expected of the average American.

An examination of a number of studies of the budgets of American workingmen's families indicates that the point of adequate subsistence is not reached until the family income is about \$800 a year.²

¹ Constitutional amendments relating to labor legislation and brief in their defense, submitted to the constitutional convention of New York State by a committee organized by the American Association for Labor Legislation, 1915.

² The following budgetary studies have been used as sources of data upon which this statement is based: Eighteenth Annual Report of the United States Commissioner of Labor, 1903. More: Wage-Earners' Budgets, 1907-1908. Chapin: The Standard of Living in New York City, 1908-1909. Byington: Homestead—A Mill Town, 1909. New York State Conference of Charities and Correction (Rochester budgets published in Chapin, sup. cit.). United States Bureau of Labor: Report on Condition of Woman and Child Wage-Earners, Vol. 19 (budgets of cotton-mill families). British Board of Trade: Inquiry into the Cost of Living in American Towns, 1909. J. C. Kennedy and others: Wages and Family Budgets in the Chicago Stockyards District, 1913-1914. United States Immigration Commission: Reports, Vol. 9 (Birmingham, Ala., budgets) and other descriptive material relating to diet of wage-earners, 1908-1909. Fourth Annual Report of the New York State Factory Investigating Commission, 1915; and various descriptive material.

Less than half of the wage earners' families in the United States have an annual income of that size, according to all statistics of income for workingmen's families.¹ If this be true, over half of the families of American wage earners must either lower their standard of life in other respects in order to have an adequate diet, or make sacrifices in their diet in order to secure healthful housing, favorable community environment, and a few of the reasonable comforts. Professor Chapin's study of the budgets and standard of living of several hundred typical workingmen's families in New York City in 1908 affords an illustration of this condition. An analysis made by Professor Underhill of the nutrition values of the food of these families showed that the proportion of underfed families were as follows:²

TABLE 2.—*Family incomes and percentages of underfed families in each income group.*

Family income.	Per cent of underfed families.	Family income.	Per cent of underfed families.
\$400-\$500.....	76	\$900-\$1,099.....	9
\$600-\$799.....	32	\$1,100 and over.....	0
\$800-\$899.....	22		

"This means," comments Prof. Chapin, "that with less than \$600 to spend for all purposes, an adequate food supply is not provided, and that on from \$600 to \$800 incomes 1 family in 3 is underfed, while less than 1 in 10 of the families having \$900 and \$1,000 to spend fell short of the minimum for food."³

Effects of increased prices of food.—The effect of the rapid increase in the retail prices of the foods that have been found to constitute the diet of workingmen's families can not be overlooked as an additional factor in this connection. Between 1900 and 1913 the average increase in the retail prices of foods was about 60 per cent,⁴ according to statistics published by the United States Department of Labor. During the same period wage rates increased less than 30 per cent, according to the same authority. Thus for families whose incomes were on the border line or below the level of bare subsistence the pressure of higher food prices must have made itself seriously felt.

The various budgetary data already referred to indicate some of these effects. It seems to be a warrantable conclusion to state that

¹ See p. 35.

² R. C. Chapin: *Standard of Living in New York City*, p. 127. These analyses were made by Dr. F. R. Underhill, professor of physiological chemistry in Yale University, upon the scale of values adopted by the Federal Department of Agriculture.

³ *Ibid.*, p. 128.

⁴ United States Department of Labor, Bureau of Labor Statistics: *Bulletins on Retail prices of foods and on Wages and hours of labor.*

families with annual incomes below \$800 or \$900 now actually spend a relatively greater proportion for food than they did 15 years ago. It is evident, therefore, that sacrifices in other items of expenditure have been made. In view of this great increase in food prices it is impossible to assume that even with these sacrifices families without an equivalent increase in income have been able to maintain their former diet. Some changes in the kinds of food have been inevitable. The character of these changes is suggested by reports of investigations which show that the smaller the family income the less is the relative importance of meat and other animal protein food in the diet. This is further evidenced by statistics of food prices, which show that the increase in prices of meats and other animal protein foods has been over 50 per cent greater than in the case of fats or starch foods since 1900.

In the light of these facts it is clearly evident that the tendency during the period 1900-1913 has been toward an impoverishment of the diet of families with low incomes.

Housing conditions.—Unfavorable conditions prevailing in the households of wage earners constitute another important phase of the problem in the environment of the wage-working population. The absence of sufficient light; the lack of ventilation facilities or, when adequate facilities exist, the continuously closed rooms to secure warmth because of the inability to provide sufficient fuel; the accumulation of filth; the prevalence of insanitary toilets; the necessity for overcrowding in order to reduce the rent to a figure which will permit the household to make ends meet—these are fairly familiar facts.

It seems to be the general experience that these conditions tend to be present where overcrowding exists, and the extent to which they prevail is perhaps best indicated by statistics of congestion among workingmen and their families. It is apparent that in a household of six or more people living in less than four rooms the conditions described by the term "bad housing" are likely to be found.

Congestion.—Recent investigations of the living conditions of wageworkers in the United States have shown that the predominant type of dwelling occupied by families of wage earners in the industrial localities investigated is the single-family house.¹ In the larger population centers the large tenement was perhaps more often found to be predominant and was a familiar type in the purely industrial localities. The predominant size of apartment or house was about four rooms, although a considerable proportion of workingmen's families lived in single rooms or in two or three room houses and

¹ This statement is based upon the results of the British Board of Trade's inquiry into the cost of living in American towns and of numerous other housing surveys and investigations. The British study included data for 90,000 working class dwellings in 27 American cities and towns.

apartments; this was especially the case in the large cities and in small mining camps and villages.¹

If a family of five persons—husband, wife, and three children—be considered normal, it must appear that even the predominant size of house or apartment is none too large. In a large proportion of wage earners' households, however, it is necessary to obtain additional income from keeping lodgers, and the number of persons per household and per room is thus greatly increased. This is especially true of the households of newer immigrant families. Taking conditions in typical industrial localities, the Federal Immigration Commission found that the average number of persons per apartment or house was nearly six, or about 1.30 persons to a room and about 2.50 persons to a sleeping room. In nearly 77 per cent of the households in industrial communities there were two or more persons to a sleeping room; in 37 per cent there were three or more persons to a sleeping room, and in 15 per cent there were four or more to a sleeping room. In nearly a third of the households every room except one was used for sleeping purposes. In nearly a third of the workingmen's families it was found that a separate family existence was prevented by the presence of lodgers, and in the households of some of the newer immigrant races the number of lodgers was extremely high. The average for Roumanian households was found to be nearly 10 lodgers, of Servian households nearly 6, and of Croatian nearly 4.² If the standard set by the New York State Conference Committee on the Standard of Living, by which more than one and a half persons to a room is held to be overcrowding, be accepted as a reasonable one, then the great extent of congestion, not only in the principal population centers but also in the industrial localities, large and small, is evident.

Overcrowding and disease.—There is no doubt that there is a relation between overcrowding and the prevalence of disease; but as a factor in causing disease it is so involved in other conditions that it is impossible to measure its exact influence. This qualification must be borne in mind when considering statistics of disease and overcrowding.

Dr. Russell found in Glasgow that in families occupying one and two room houses nearly 28 out of every 1,000 died each year; in families occupying three and four room houses the death rate was 19.4, and in houses of five or more rooms the rate was only 11.2. Tuberculosis is a disease which has been found to be peculiarly an incident

¹ The Federal Immigration Commission's investigation of over 17,000 families in industrial localities showed that the average number of rooms per household was 4.34, and of over 10,000 families in large cities was 3.70. This was corroborated by the British Board of Trade's study referred to above.

² These figures are based on the statistics secured by the Federal Immigration Commission in its investigation of nearly 28,000 households of workingmen's families in 1907-1909.

of bad housing conditions. It is a "house disease," as Dr. Osler has expressed it. European statistics on this point¹ are apparently confirmed by recent studies in New York City. A survey of the Washington Street district² showed that 57 per cent of the families lived in two rooms and 26 per cent in three rooms, many of these families having lodgers. The death rate from tuberculosis in this district in 1913 was between 500 and 600 per 100,000, or about four times the rate generally prevalent. In one block in this district 63 cases of tuberculosis were found in 1913. Another study of 217 working-class families in New York City reported almost unbelievable conditions. In his description and summary of this investigation, Fishberg said:³

These families consisted of 1,369 persons, of whom 1,129 lived at "home" in 717 rooms and slept in 658 beds. That is about two to a bed and 1.57 to a room, including kitchens. Of the 274 tuberculous persons only 112 had separate rooms and only 138 had separate beds. Some consumptive mothers slept on chairs or on the kitchen floors.

Depressing as this picture is, Fishberg's observation has been that such a state of affairs is not unusual in industrial centers in the United States.

Lodging-house conditions.—The bad conditions that prevail in lodging houses have been found to be peculiarly conducive to the spread of disease, particularly of tuberculosis. In nearly all industrial communities to which workers of the newer immigration have come the boarding and lodging house is a familiar institution. There the foreign laborers who are unmarried or who have left their families in their native land crowd together. The following description of lodging-house conditions in East Youngstown, Ohio, is believed to be typical⁴ of conditions in the immigrant districts of industrial communities:⁵

By reason of the tendency of workmen of the same race to lodge in the same section or town, the lodging houses exhibited many instances of extreme overcrowding. Thus, in one case there were 23 lodgers in a four-room house, and it was by no means uncommon to find a single room occupied by from 3 to 12

¹ The familiar Berlin statistics showed that 42 per cent of all the cases of tuberculosis occurred in families occupying but one room, 40 per cent where they occupied two rooms, 12 per cent where they occupied three rooms, and only 6 per cent where they occupied four or more rooms. Williamson presented English statistics which showed that 60 or 70 per cent of the cases of tuberculosis occurred in houses of three rooms or less and that the number of cases was larger in two-room houses than in three, and larger in one-room houses than in two. (British Journal of Tuberculosis, IX: 111-117, July, 1915.)

² A Survey of the Washington Street District of New York City, 1914, pp. 56-57.

³ Maurice Fishberg: A Study of the Child in the Tuberculosis Milieu. Arch. Pediat., February, 1914.

⁴ The reports of the Federal Immigration Commission (vols. 8-20) contain a large number of community studies in which descriptions of the immigrant lodging houses appear that depict even worse conditions than shown in the above.

⁵ United States Public Health Service Public Health Reports, March 6, 1914: A Report on the Prevalence of Trachoma among Steel Mill Workers in East Youngstown, Ohio, by Surg. J. W. Schereschewsky, United States Public Health Service, pp. 565-566.

workers. The lodgers, for the most part, slept two in a bed. In some of the lodging houses, where the men work on both "day and night turns," the occupation of the beds is almost continuous, the night men taking during the day the places of those sleeping at night in the beds. The beds themselves were usually old and in filthy condition, destitute of bed linen, the covers consisting of old bedquilts. The washing facilities consisted of buckets or hand basins, which were used in common by all the occupants of a room. The houses themselves were for the most part built close together, so that the rooms were dark. Very few of the rooms were susceptible of thorough ventilation. Indeed, but little advantage would have been taken of such a provision, as all windows were found carefully closed and the temperature was still further raised by small stoves.

The observation of the above writer was that "the conditions in lodging houses were such as not only to facilitate the spread of trachoma, or, for that matter, of any communicable disease, but to cause one to wonder why the disease is not more prevalent than it is."

An additional disease-causing factor in the lodging houses, especially in those of the larger cities, is the fact that it is to them that the "casual" or "floating" laborer, already impaired in health and in disease-resisting power, comes for a shelter which is within his meager means. According to an investigation of lodging-house conditions in New York City, the lodging-house population is eleven times more subject to tuberculosis than the average population.¹

Community environment.—That the average unskilled wageworker and his family live in a community environment unmistakably less healthful and possessing fewer conveniences than that of the average person engaged in better-paid pursuits is a fact which has impressed itself upon physicians and others in contact with the working population. Numerous investigations and surveys have called attention to a frequent lack of water and sewerage facilities, unpaved or unkempt streets, and delays in making public improvements in "working-class sections." In every American city and in the average American industrial locality is to be found the "tenement section" or the "slums," as contrasted with the "residential" and "business" sections. Since the newer immigration has come into the unskilled occupations in American industries, practically all industrial towns and cities now have their "little Italies" and their "Hungary hollows."²

The extent to which unfavorable community conditions actually exist is hardly appreciated. Although studies in New York City

¹ C. B. Barnes: *Tuberculosis Among Homeless Men and in Lodging Houses*, *Journal of Outdoor Life*, April, 1914.

² The Federal Immigration Commission conducted a large number of "community" investigations in 1907-1909 which have afforded valuable descriptions of industrial localities from the standpoint of the environment of the wageworker. (See Reports of the U. S. Immigration Commission, vols. 6-20.) In addition, a great deal of interesting and valuable material on this phase of the problem is to be found in housing surveys published in pamphlet or book form, in Margaret Byington's book "*Homestead: A Mill Town*," and in many articles in the periodical press written by social workers.

showed that a few years ago over a million wageworkers had no bathing facilities in their homes and an even greater number were limited to the use of sanitary conveniences in common with other families; although until recently 2,000 antiquated privy sinks existed in densely populated sections in New York City and there were 100,000 rooms which were dark and unventilated, yet there have been found equally as bad, if not worse, conditions in scores of manufacturing and mining localities where large numbers of unskilled and low-paid workers are employed. Dr. George T. Palmer, the health officer of Springfield, Ill., has cited the example of one city where millions of dollars had been expended for water and sewers and where it was generally presumed that a large majority of its population utilized these facilities, but where a survey disclosed the fact that only one-third of the people had sanitary connections, thereby explaining the undue prevalence of typhoid fever. Recent investigations have shown that earth closets, outdoor closets, and cesspools are all too numerous in the congested districts of all of our large cities. These facts are not cited for the purpose of belittling the improvements that have been made or are being undertaken, but to give some idea of the magnitude of the work which local and State health authorities have before them. The significant point here is the fact that these disease-causing conditions have been found to exist chiefly, and in some cases entirely, in those sections and localities inhabited by wage earners and their families. They thus contribute their share to the complexity of the problem of the wage-worker's health.

Effects of unfavorable community environment upon health.—In determining the effects of community conditions upon health, it is difficult to state in exact figures just how much of the higher morbidity and mortality rates among the wageworking population is due to community environment and how much to other conditions. But it is clear that community environment has direct detrimental effects on health. This is suggested by the results of Dr. Antonio Stella's intensive study of six tenement blocks in New York City. There it was found that, while the death rate at that time for the city as a whole was 18.3 per thousand and 51.5 for children under five years of age, it varied in these particular blocks from 22.3 to 24.9 per thousand for all ages and from 59.2 to 92.2 per thousand for children under five years of age.

An investigation of three "working-class" districts in Cleveland, one typical of the best community conditions, one of average conditions, and one of the worst conditions, found that the tuberculosis rate per thousand in 1912 was 35 for the worst, 23 for the average, and 5 for the best. The districts were rated according to the usual standards of sanitation.

The findings of a committee of the American Iron and Steel Institute which visited a number of industrial towns are of especial significance in this connection. Dr. Thomas Darlington, secretary of the welfare committee of the institute, in commenting upon these findings, said:¹

A study of the causes of death shows that, in general, but 4 per cent die from old age, 4 per cent more die from violence, and 92 per cent die from disease. Of this last great group, nearly one-half are due to diseases of environment; that is, to diseases which * * * are wholly preventable. Taking 15 of the principal towns visited by the institute, excluding the large cities, the death rates average 19 per 1,000—easily double what it should be and at least one-third more than the rate of some cities of larger size.

These conditions are similar to those indicated by the mortality statistics of the Federal census for many localities where large numbers of low-paid wageworkers live. While the death rate for the entire registration area in 1913 was found to be 14.1 per 1,000, in certain communities where investigation has shown the prevalence of low wages and unfavorable sanitary conditions the rate was much higher. The higher rate in these communities was not attributable to occupational hazards, since it was above that of other communities where similar occupations prevailed. It is only necessary to note, for example, that the death rate in 1913 for Fall River, Mass., was 17.2; for Johnstown, Pa., 16.9; for McKee's Rocks, Pa., 16.9; for Shenandoah, Pa., 18.9; and for Braddock, Pa., 23.2. As it is generally recognized that mortality returns in localities of this type are more or less incomplete, it is safe to say that the rates cited are lower than more thorough and complete vital statistics would show.

Infant mortality as an indicator of the healthfulness of environment.—Mortality among children is generally recognized as a very sensitive indicator of the health conditions of a community. The Federal census reports for the five years, 1909 to 1913, inclusive, showed that the deaths among children under 5 years of age averaged 27 per cent of all deaths in registration cities of the United States, as contrasted with considerably higher percentages for certain iron and steel manufacturing towns, where investigations have shown unhealthful conditions to exist and where low-paid wage earners constitute a large part of the population.² This contrast is strikingly shown by the following statistics:

¹ "Health and Efficiency," an address delivered at the annual banquet of the American Iron and Steel Institute, held in New York City, May 17, 1912. Published in pamphlet form.

² Iron and steel towns are used as illustrations not because there is any direct connection between the industry and child mortality, but because it is generally true in iron and steel towns that there is little opportunity for factory or mill employment of women. Hence in the above statistics the factor of wagework of mothers is practically eliminated from the question of child mortality.

TABLE 3.—Per cent which deaths of children under 5 years of age are of total deaths at all ages, average for all registration cities and for certain iron and steel towns, for the 5-year period 1909–1913.

	Per cent.
All cities in the registration area (average).....	27
Iron and steel communities:	
Braddock, Pa.....	51
Carnegie, Pa.....	47
Homestead, Pa.....	57
Johnstown, Pa.....	40
Monessen, Pa.....	67
South Bethlehem, Pa.....	55
Steelton, Pa.....	45
Loraine, Ohio.....	45
Youngstown, Ohio.....	39
Gary, Ind.....	48

Thus the percentage of all deaths of children under 5 years of age in these industrial communities during the period indicated was from 50 to 150 per cent above the average for all cities in the registration area.

An even sharper contrast is shown when communities of this type are compared with residential communities composed largely of well-to-do families. For example, in Brookline, Mass., the deaths of children under 5 years of age for the same period averaged 10 per cent of all deaths. In East Orange, N. J., the percentage was 17.1.

The iron and steel communities included in the above table are but typical of other industrial communities where the coming in of large numbers of newer immigrant races has outstripped the community's realization of the need for a corresponding development of public-welfare provisions and administration. In Johnstown, for example, according to recent investigations,¹ the line of demarcation between sections occupied by low-paid foreign-born workingmen's families and the sections occupied by families of skilled workers, business men, and other residents is sharply drawn. In the "working class" sections bad sewerage, insufficient water connections, inadequate street improvements, and infrequent cleaning of streets were found to be plainly prevalent. Lack of proper municipal supervision of the milk supply was most evident in the case of milk consumed by the

¹ See United States Department of Labor, Children's Bureau: *Infant Mortality, Results of Field Study in Johnstown, Pa., based on births in one calendar year* (pp. 14–20), and *Reports of the Immigration Commission*, Vol. 8 (p. 436). Johnstown was selected as a typical industrial community for intensive investigation by both the Immigration Commission and the Children's Bureau. (See *Reports of the Immigration Commission*, Vol. 8, p. 237; *Jenks and Lauck: The Immigration Problem*, 3d ed., p. 72; *Children's Bureau report sup. cit.*, p. 5.)

poorer families.¹ While insufficient family income and bad housing and household conditions also had their effects, the infant mortality rate was reported to be much higher in the unfavorable sections than in the other sections. In the distinctly unskilled workingmen's wards the infant mortality rates were found to range from 156 to 271, while in the other wards the rates ranged from 50 to 125.

THE EMPLOYMENT OF WOMEN.

The entrance of women as wage earners into the modern factory, mercantile, and other mechanical establishments and offices is a factor in the problem of the health of the wage-working population, which is largely, if not entirely, due to economic pressure. According to the census of 1910, of the 8,000,000 women ordinarily termed "women in industry," nearly 37 per cent, or about 3,000,000, are engaged in various occupations in stores, mills, and factories. Practically every investigation of the reasons for the entrance of women into industry has shown that their presence in industrial occupations is almost wholly in response to the necessity for earning a living. Approximately four-fifths of women workers live with their families and contribute to the support of their families.² They are, for the most part, the wives and daughters of the wage-earning heads of families. A number of investigations indicate that in fully one-tenth of the wage-earners' families in the United States the wife is a wageworker.³ In certain industries the proportion of wage-earning wives and mothers is considerably higher.⁴

Effects of industrial occupation upon the health of women wage-workers.—The factor of sex renders the problem of the health of the wage-working population more acute and complex. In view of the generally accepted fact that in the population as a whole the female mortality rate is less than the male, it would seem reasonable to assume that, excluding confinements, the female morbidity rate is

¹ The investigation into the milk supply in Johnstown was made by the Federal Bureau of Animal Industry in 1913, and the report of the investigation is published as a part of the Federal Children's Bureau infant mortality study (sup. cit., Appendix III). Since this report was made a citizens' campaign for clean milk has been conducted with beneficial results. The unfavorable milk situation existed, however, at the times the Children's Bureau and the Immigration Commission made their investigations.

² United States Bureau of Labor: *Woman and Child Wage Earners*, Vol. V, p. 15, including data for women workers in retail stores and in factories in several large cities; Wisconsin Industrial Commission, 1914, report on wage-earning women, including data for over 17,000 workers; United States Census, data for about 900,000 working women; etc.

³ Eighteenth Annual Report of the United States Commissioner of Labor, p. 51; Reports of the United States Immigration Commission, Vol. 19, p. 128; etc.

⁴ United States Bureau of Labor: *Woman and Child Wage Earners*: Vol. IV, p. 263 (for silk industry); *ibid.*, Vol. III, p. 524 (for glass industry); *ibid.*, Vol. I, p. 432 (for textile workers in New England and Southern mills.)

not greater than the male. Among women employed as wage-workers, however, these conditions are apparently reversed.

Perry's statistics of cotton-mill operatives and statistics of the Leipzig, Austrian, and Italian insurance funds show that the mortality rate of female wage earners under 40 years of age is higher than that of male wage earners in the same age group. Not until the age of 40 is passed does the natural excess of mortality among males assert itself.¹

Since few women remain in industry after 35 years of age, it would appear that the morbidity and mortality expectancy of women industrially employed is greater than that of women in the population as a whole in similar age groups. Perry, in his study of the causes of death among women and child cotton-mill workers, found that the death rate among female operatives was more than twice as high as that of females outside of the mills. This difference, he found, could not be attributed to living conditions in the localities where his investigation was made because the living conditions of both operatives

¹ The following tabulation combines in brief form the statistics referred to above:

Excess of female over male death rate per 100,000 according to age group.

[— denotes excess of male over female death rate.]

Age group.	United States cotton-mill operatives. ^a	Leipzig funds. ^b	Austrian funds. ^c	Italian societies. ^d	United States registration area, United States Census, 1909. ^e
15-19.....	27	.....	440	.....	— 58
20-24.....	46	33	420	.....	—109
25-29.....	353	30	400	320	—112
30-34.....	260	109	260	450	—209
35-39.....	590	70	160	30	—209
40-44.....	737	—184	— 60	80	—450
45-49.....	.....	—400	—490	—270	—450
50-54.....	.....	—428	—490	— 80	—702
55-59.....	.....	—803	—410	—630	—702
60-64.....	.....	—928	—870	.....	—702

^a Perry; *supra* cit., p. 75. The American cotton-mill workers statistics indicate in this instance that the proportion of women over 25 years of age engaged in the mills is larger than the usual proportion of women wage-workers over that age in American or European industries in general.

^b Leipzig Local Sick Fund, statistics for 1887 to 1905, Twenty-third Annual Report of the United States Commissioner of Labor: Workmen's Insurance and Compensation Systems in Europe, Vol. I, p. 1269.

^c The age groups are "15½ to 20½," "over 20½ to 25½," etc. See Amtliche Nachrichten betr. Unfall-und Krankenversicherung, 1893, and the Twenty-third Annual Report of the Commissioner of Labor, *sup. cit.*, p. 295.

^d Journal of the Royal Statistical Society, Vol. LV, London, 1892: Morbidity and Mortality according to Occupation, by Dr. Jacques Bertillon, quoting statistics of the Statistical Office of Italy. See also Goldmark: Fatigue and Efficiency, Part II, p. 24.

^e L. I. Dublin, Statistician Metropolitan Life Insurance Co.: The Insurability of Women. An Address before American Life Convention, Aug. 19, 1913, p. 1.

NOTE.—The differences in actual excess of female death rates in the statistics above may be due to differences in occupation and conditions of living. The fact of an excess, however, appears common to all countries.

and nonoperatives were similar from the standpoint of health. He thus found it impossible "to escape the conclusion that operative work is prejudicial to health of females, that the combination of operative work with matrimony is especially harmful, and that, while the general hazards of female operatives is greater than that of nonoperatives, she is in most danger from tuberculosis."¹

Statistics from American and European sources show that the female wage earner loses more time on account of sickness than the male. For example, the Leipzig figures for about one and a quarter million insured wage earners, of whom over 250,000 were women, covering a period of 19 years (1887-1905), show an average of 8.55 days lost per annum per male insured person as contrasted with 10.30 per female insured person.² These well-known data are corroborated by other European statistics.³

Statistics for over 16,000 Government employees working in the departments at Washington, D. C., of whom over 4,000 were females, show for the year 1914 that males lost an average of 4.82 days and

¹ Report on Condition of Woman and Child Wage Earners in the United States, Vol. XIV: Causes of Death Among Woman and Child Cotton Mill Operatives, by Arthur R. Perry, M. D. (S. Doc. No. 645, 61st Cong., 2d sess.), p. 32.

² These statistics are reprinted in the Twenty-Fourth Annual Report of the U. S. Commissioner of Labor, Vol. I, pp. 1261, 1262.

³ Goldmark has collected statistics from a number of European sources which are summarized in her volume *Fatigue and Efficiency* (Part II, pp. 10-25). From this collection the following references and quotations are made: Swiss statistics, Dr. Fridolin Schuler: *Fabrikhygiene und Gesetzgebung*, Sixth International Congress of Hygiene and Demography, Vienna, 1887, Part XIV, Vol. I, French statistics, records of a mutual society of silk workers in Lyons, France, 1889, quoted by Dr. Alexander Layet: *Le Travail des Enfants et des Femmes dans l'Industrie*, in *Encyclopedia of Hygiene and Public Medicine*, Paris, 1894, Vol. 6, p. 721. Bertillon presented statistics from the Lyons silk workers and the Italian societies a number of years ago in one of the first discussions of the comparative morbidity and mortality of male and female workers. See a translation from the *Journal de la Société de Statistique de Paris*, October-November, 1892, in the *Journal of the Royal Statistical Society* (London), Vol. LV, pp. 564-565. These statistics are summarized in the following table:

Comparative morbidity of the two sexes: Days of sickness per annum per member.

Age group.	Lyons silk workers (1872-1890).		Italian societies, 1881-1885 (corrected figures).		Age group.	Lyons silk workers (1872-1890).		Italian societies, 1881-1885 (corrected figures).	
	Men.	Women.	Men.	Women.		Men.	Women.	Men.	Women.
18 and 19.....	1.76	2.18	.....	.....	55-59.....	8.38	11.01	9.2	9.7
20-24.....	3.06	6.37	5.0	7.8	60-64.....	11.15	14.62	11.2	10.0
25-29.....	3.40	7.49	5.4	8.0	65-69.....	16.73	18.57	13.4	8.2
30-34.....	3.37	7.64	5.1	8.9	70-74.....	19.76	24.48	14.7	.....
35-39.....	4.32	7.62	6.0	7.7	Above 75.....	26.90	30.87	13.4	.....
40-44.....	5.29	7.64	6.2	9.3					
45-49.....	5.89	8.12	6.8	8.2	Average...	7.81	9.39	6.6	8.5
50-54.....	8.04	9.58	7.9	9.3					

females 8.90 days on account of sickness. This difference, as generally shown by records of morbidity for wage-earning men and women, can not be explained altogether on the ground that days lost on account of confinement are included in the statistics for female workers. In the Austrian statistics for insured persons, where time lost on account of confinement is separated from the total time lost on account of disability, the disability rate for males and females varies. For example, in the years 1890 to 1899 the female rate is higher than the male, whereas in the years 1900 to 1907 the male rate is higher than the female.¹ When, however, the differences due to accidents, which are included in the statistics, and the higher average age of the males are considered, it is very probable that the sick rate for women is higher than the male rate, even when time lost on account of confinement is excluded.

By most writers the greater morbidity of women wage earners has been explained by the longer duration of sickness of women as compared with men. It is true, as a number of well-known investigations have shown, that the average length of illness of female wage-

¹ Rates of sickness in Austrian sick funds, by sex, 1890-1907.

Year.	Average number of days of sickness per member.			Year.	Average number of days of sickness per member.		
	Males.	Females.			Males.	Females.	
		Not including confinements.	Including confinements.			Not including confinements.	Including confinements.
1890.....	7.32	8.44	10.48	1899.....	8.58	8.77	11.33
1891.....	6.99	7.88	10.03	1900.....	8.53	8.49	11.08
1892.....	7.32	8.00	10.25	1901.....	8.74	8.42	10.93
1893.....	7.59	8.04	10.33	1902.....	8.50	8.18	10.68
1894.....	7.47	7.74	10.11	1903.....	8.69	8.58	10.97
1895.....	7.85	8.23	10.68	1894.....	8.60	8.31	10.70
1896.....	7.90	7.72	10.24	1905.....	9.05	8.74	10.98
1897.....	8.18	8.25	10.75	1906.....	8.54	8.19	10.44
1898.....	8.06	8.50	11.10	1907.....	9.17	9.03	11.26

Amtliche Nachrichten betr. Unfall- und Krankenversicherung, 1892-1909, quoted in Twenty-fourth Annual Report of the United States Commissioner of Labor, 1909, Vol. I, p. 276.

workers is longer than that of male wageworkers.¹ When, however, the statistics of morbidity for men and women employed in the same industry or under similar conditions are compared, it appears that women workers are sick more often than men.²

¹ A compilation of some of the more important European statistics, as published in Dr. Friedrich Prinsing's *Handbuch der Medizinischen Statistik* (p. 116), will serve to illustrate familiar experience:

Average length of illness among men and women workers.

Age group.	Average days of illness per person, according to the age and sex.					
	Frankfort.		Austria.		Leipzig, 1856-1880.	
	Men.	Women.	Men.	Women.	Men.	Women.
Under 15.....	14.7	18.4	12.6	14.5	.....	.....
15-20.....	16.4	19.3	13.7	16.1	19.3	21.6
20-30.....	19.3	24.6	14.3	18.0	19.9	30.3
30-40.....	22.7	31.4	15.9	20.2	24.0	33.4
40-50.....	27.1	31.6	18.6	21.6	30.7	37.9
50-60.....	32.9	45.4	21.1	23.9	38.9	44.4
60 and over.....	38.9	58.1	29.8	31.3	44.1	55.1
Average.....	21.6	24.4	16.5	18.8	27.4	35.0

Other statistics point to the same conclusion. Dr. Fridolin Schuler, in the course of his careful examinations of Swiss factory workers, found that the duration of illness among males was only 85 per cent of what it was among women, and the average duration of sickness in 1889 was 21 days for men as compared with 25 days for women (Schuler and Burekhardt: *Untersuchungen über die Gesundheitsverhältnisse der Fabrikbevölkerung der Schweiz*, p. 34). The report of the mutual aid societies in Switzerland for 1902, for example, showed that the men who received sick relief averaged 23.55 days of illness and the women 32.46 (Die Gegenseitigen Hilfsgesellschaften in der Schweiz in Jahre 1902, p. 42). German statistics for 1906, compiled from the records of the German national sickness insurance system, showed that while 3.5 per cent of male workers in 100 cases of sickness lost from 14 to 25 weeks, the percentage for women workers was 5.7, and a greater percentage of women were ill more than 25 weeks than of men (Statistik des Deutschen Reichs, vol. 186: *Sickness Insurance for 1906*, compiled in the Imperial Office of Statistics, quoting Heym). The statistics from the sources named above are summarized in Goldmark: *Fatigue and Efficiency*, Part II, pp. 15-20.

² The statistics collected by the Austrian Government from the records of sickness insurance societies for over six and a quarter million males and about two million females, covering the period 1891-1905, showed a greater frequency of illness among women workers than among men in nearly all instances where they were engaged in the same occupation or industry. The following tabulation shows the relative morbidity rates of men and women in a number of industries, frequency of illness being taken as the measure of morbidity (Amtliche Nachrichten betr. Unfall- und Krankenversicherung, 1900; see Twenty-fourth Annual Report of the United States Commissioner of Labor, pp. 381, 382-383, 385-386, 389, and 392):

Frequency of sickness among male and female workers insured in Austrian sick funds, 1891 to 1896, in certain occupations and industries, by age groups.

Age group.	Cases of sickness per 100 persons per annum.									
	Textiles.		Clothing.		Glove making.		Bookbinding.		Match factories.	
	Men.	Women.	Men.	Women.	Men.	Women. ^a	Men.	Women. ^a	Men.	Women. ^a
16-20.....	42.2	42.3	42.0	42.7	33.8	31.3	35.5	38.6	49.0	48.0
21-25.....	38.6	40.6	39.0	47.8	31.4	28.3	29.5	37.7	43.5	52.2
26-30.....	35.5	40.7	38.1	45.8	34.6	44.0	25.7	38.8	49.4	55.0
31-35.....	34.6	41.8	38.9	45.9	30.5	50.9	26.5	42.9	51.1	49.8
36-40.....	34.7	43.7	42.1	46.7	32.0	51.5	24.3	43.0	45.2	43.1
41-45.....	36.7	46.4	40.6	40.7	31.4	52.9	27.2	38.9	49.3	50.7
46-50.....	38.5	48.1	43.7	48.3	35.8	63.3	25.2	25.6	38.6	40.9
Average....	39.0	42.9	41.0	44.6	34.0	40.9	29.2	37.8	47.8	48.7

^a Not including confinements in data relating to disability.

Schuler, Pieper and Simon, and von Arlt have noted the same conclusions in their investigations and statistical studies. See Schuler, Sixth International Congress of Hygiene and Demography, sup. cit., p. 29; Schuler and Burekhardt, sup. cit., pp. 33-34; Pieper and Simon, *Die Herabsetzung der Arbeitszeit für Frauen und die Erhöhung des Schutzes für jugendliche Arbeiter in Fabriken*, Publications of the Social Reform Society, Nos. 7 and 8, 1903, p. 93. Pieper and Simon's references are to the experience in the Berlin printing trades and to the statistics of German sickness insurance in general. Von Arlt's studies were of the Austrian sickness insurance experience. See Ilse von Arlt, *Le Travail de Nuit des Femmes dans l'Industrie en Autriche*, in Bauer's *Night Work among Women in Industry—Reports on its Importance and Legal Regulation*, 1903, p. 100. The data from Schuler, Pieper and Simon, and von Arlt are summarized by Goldmark: *Fatigue and Efficiency*, Part II, pp. 11-14.

Causes of a greater health hazard to women wage earners.—The greater health hazard to wage-earning women is admitted to be due primarily to the difference in sex, but among other special conditions which tend to increase the hazard to wage-earning women may be mentioned the precariousness of their employment and the additional work imposed by household duties. The precariousness of their employment is a constant spur to them to go beyond the limit of their strength, particularly where they are employed on piecework. The household duties of wage-earning women, especially of working mothers, impose double work. The workday of the wage-earning mother begins considerably earlier than the opening of the gates of the mill or factory or of the doors of the store in which she is employed, and is not ended when she comes home. She can not afford, even if she appreciates its importance, to stay at home for a proper period of rest before and after confinement.

Effects of employment of mothers upon viability and health of children.—Investigators of the effects of employment of mothers upon the viability and health of their offspring have as yet failed to present statistics which show conclusively that the mortality rate among infants of employed mothers is markedly greater than among those of mothers not industrially employed. In fact, some careful studies indicate the conclusion that, while there is no doubt as to the prejudicial influence of employment of pregnant and nursing mothers in factories upon the health of both mothers and infants, poverty has a much more deleterious influence, and if by employment poverty can be removed or lessened, such employment is the lesser by far of the two evils.¹ But when poverty is not mitigated by the mothers' wages to such an extent as to offset the effects of artificial feeding and lack of care of their infants entailed by their absence, the deleterious influence of such employment upon the viability and health of their infants may appear.

The effects, however, of employment of mothers upon the prenatal condition of their infants are suggested by records of infants at birth and of premature births. Records of the weights of several thousands of babies at birth show a difference in weight of one-fourth to three-fourths of a pound in favor of the babies of mothers who were not

¹ Infant Mortality in Relation to Factory Labor, by John Robertson, M. D., B. Sc., medical officer of health, Birmingham, England, Transactions of the Fifteenth International Congress on Hygiene and Demography, Washington, 1912, Vol. III, Part II, p. 952. See also Infant Mortality and its Relation to Women's Employment, in Vol. XIII of Federal Bureau of Labor's Report on Condition of Woman and Child Wage Earners, pp. 48-49; Infant Mortality, Johnstown, Pa., Federal Children's Bureau, p. 49. The statistical evidence on this point is discussed in some detail in The Influence of Economic and Industrial Conditions on Infant Mortality, by H. H. Hibbs, jr., Quarterly Journal of Economics, XXX, 127-151 (November, 1915).

employed within the last two weeks before confinement.¹ Robertson's records show that premature births were more than one-third greater among mothers employed before confinement as compared with mothers not so employed, and he concludes that factory labor has a distinct influence in causing premature births.²

ECONOMIC STATUS OF WAGE EARNERS.

No attempt to present the real meaning of the problem of health among wageworkers and their families can be complete without taking into consideration their economic status—the wages they earn and the income which the wage earner's family is able to receive—and comparing it with those standards which have been agreed upon as reasonable and necessary for the maintenance of health.³

¹ See editorial in the Journal of the American Medical Association, "Work During Pregnancy and the Weight of the Child," Jan. 31, 1914, Vol. LXII, pp. 382-383. Pinard gives the average weight of children of mothers working up to the time of delivery as 6½ pounds, against 7½ pounds for children of mothers who rested during the last months of pregnancy. Peller, working under the direction of Teleky at the University of Vienna, found that children of rich mothers showed a superiority of weight over children of working mothers employed up to the time of confinement, the superiority in weight being 215 grams for boys and 150 grams for girls. The influence of a short respite from work and worry of women coming to the hospital in time for a period of rest is shown in a comparison of the weights of children of women having a respite and of those working up to confinement, the superiority of the children of the former being 118 grams for boys and 126 for girls. He found that rest during the last two weeks was of greater importance than at any other time during confinement. See Peller, *Der Einfluss sozialen Momente auf den körperlichen Entwicklungszustand der Neugeborenen*, Sonderabdruck aus dem *Beihft der Wochenschrift das österreichische Sanitätswesen*, 1913, No. 38.

² Robertson, John, *sup. cit.*, p. 949.

³ The data upon which the statements in this summary are based have been drawn from an examination of the official and authoritative investigations and reports published in this country during the last 15 years, particularly during the past 7 years. Computations of annual earnings from weekly wages have been avoided, only statistics of actual annual earnings and income being included. Statistics of weekly wages and earnings of workers have been consulted in the Massachusetts, New Jersey, and Kansas State reports, the reports of the United States Immigration Commission, the New York State Factory Investigating Commission, the Federal report on Woman and Child Wage Earners, the Federal Census report of 1905, the Federal Bureau of Labor Statistics' investigation of wages in the dress and waist industry in New York City, the Federal reports on the Lawrence, Mass., strike, and the Michigan strike, the Massachusetts Minimum Wage Commission's investigations, the reports of Washington (State) Industrial Welfare Commission, the Minnesota Minimum Wage Commission, the Missouri Senate Wage Committee, the Kentucky Commission to Investigate Conditions of Working Women, the Oregon Social Survey Committee, the Connecticut Bureau of Labor, the Illinois Bureau of Labor Statistics, the Ohio Industrial Commission, the Consumers' League of Eastern Pennsylvania, and the Federal Bureau of Labor Statistics' investigation of women in mercantile and factory establishments in Indiana. In addition, data have been utilized from Miss Van Kleeck's studies of women and girl workers in various trades, the University of Chicago settlement studies in the Chicago stockyards district, the Russell Sage Foundation's studies in the Pittsburgh district, etc. Statistics of annual earnings have been consulted in the reports of the United States Immigration Commission, the United States Bureau of Labor (Eighteenth Annual Report), and the State reports of Massachusetts, New Jersey, Pennsylvania, and Wisconsin. Family income statistics have been consulted in the reports of the United States Immigration Commission, the Eighteenth Annual Report of the Federal Commissioner of Labor, and the various budgetary studies referred to in the foregoing pages.

Wages.—Without taking into consideration the loss of working time for any cause, it has been found that during recent years in the principal industries of the United States, between one-fourth and one-third of the male workers of approximately 18 years of age and over earned less than \$10 a week, from two-thirds to three-fourths earned less than \$15, and only about one-tenth earned more than \$20 a week. In textile manufacturing and some other industries the wage level was much lower. Native born and older immigrant workers from Great Britain and northern Europe earned somewhat higher weekly wages than did the newer immigrant workers from southern and eastern Europe. The wages of women workers were considerably lower than those of men. From two-thirds to three-fourths of women workers in factories, stores, laundries, and in industrial occupations generally worked at wages of less than \$8 a week. Approximately one-fifth earned less than \$4 and nearly one-half earned less than \$6 a week.

Loss in working time.—A conservative estimate, based on all of the available statistics of loss in working time, would appear to be that wageworkers in the principal manufacturing and mining industries lost on the average from one-fifth to one-third of the full working time during a year from all causes. This estimate does not include those industries which normally operated for short seasons in the year. The loss of working time varied greatly according to the industry, occupation, and locality, but it was greatest in those industries where the proportion of unskilled, low-paid workers was large.

Annual earnings.—Annual earnings of wageworkers were therefore considerably lower than 52 times their weekly wages. According to investigations to which reference has been made it appears that in the principal industries fully one-fourth of adult male workers who are heads of families earned less than \$400, one-half earned less than \$600, four-fifths earned less than \$800, and less than one-tenth earned as much as \$1,000 a year. Approximately one-fourth of the women workers 18 years of age and over employed in the principal manufacturing industries earned less than \$200 a year, and two-thirds earned less than \$400.

Family income.—Statistics of total incomes of wageworkers' families point to the conclusion that the average total annual family income in the principal manufacturing and mining industries has been between \$700 and \$800 in recent years. This average, however, does not adequately depict the real situation; for the conclusion is also indicated that one in every 10 or 12 workingmen's families had at the time of the investigations an annual income of less than \$300 a year; that nearly a third had incomes of less than \$500, and over one-half had incomes of less than \$750 a year. It is also apparent that, with the exception of the small proportion of work-

ingmen's families whose heads earned \$800 or more a year, the total family income was considerably larger than the earnings of the father. It has indeed been found that considerably over one-half of wage-earning families were dependent upon some other source than the support of their heads. And, generally speaking, it is true that in proportion to the insufficiency of the earnings of the father the greater is the necessity for additional income from the wages of wife and children and payments from boarders and lodgers.

Adequacy of wages and income.—The significance of the above statistics lies in the extent to which actual earnings have been sufficient to provide for a healthful standard of life under existing conditions. Several studies by various authorities on actual conditions in workingmen's families tend to agree very closely that unless a family of the average size¹ has an annual income of \$800 or more,² it can not maintain a healthful standard. This conclusion is apparently confirmed by statistics of expenditures in workingmen's families which show that the point of adequate subsistence is not reached until the family income is approximately \$800 or more.³

For women wageworkers, \$8 to \$9 a week has been agreed upon as the least amount upon which a self-supporting woman can maintain a standard of healthful living. This estimate is based on the conclusions and determinations of State minimum wage commissions and other investigating bodies.⁴

It is possible that more comprehensive and detailed investigations of wages and earnings may point to slightly or even materially different conclusions. But sufficient information of an accurate character exists to substantiate the observation of everyone familiar with living and working conditions, that a very considerable proportion of wage earners and their families have not been able to obtain a sufficient income to permit of a healthful standard of living.

POVERTY AND DISEASE.

From the foregoing it is evident that underlying all other economic factors affecting the wage earners' health is the fact of poverty. The

¹ A family of five persons—father, mother, and three dependent children.

² R. C. Chapin: *Standard of Living in New York City*; L. B. More: *Wage-Earners' Budgets*; New York State Conference of Charities and Corrections committee on standards of living; M. Byington: *The Households of a Mill Town*; J. C. Kennedy: *Wages and Family Budgets in the Chicago Stockyards District*; Fourth Annual Report of the New York State Factory Investigating Commission, Vol. IV; New York City Bureau of Standards: *Report on the Cost of Living for an Unskilled Laborer's Family*.

³ United States Bureau of Labor: 18th Annual Report; R. C. Chapin, *sup. cit.*; More, *sup. cit.*; British Board of Trade: *Report on Cost of Living in American Towns*.

⁴ California Industrial Welfare Commission; Massachusetts Minimum Wage Commission; Minnesota Minimum Wage Commission; Nebraska Bureau of Labor and Industrial Statistics; Washington Industrial Welfare Commission; Wisconsin Industrial Commission; Ohio Industrial Commission; Connecticut Bureau of Labor; Kentucky Commission to Investigate the Conditions of Working Women in Kentucky; New York State Factory Investigating Commission; and a number of private investigators and writers have set standards for a minimum "living wage" for women.

other conditions that have been discussed—unhealthful living and working conditions, insecurity and irregularity of employment and income, inadequacy of earnings of heads of families, and the necessity for earning of wages by mothers and children—these and other such conditions are but incidents of poverty. The importance of poverty is further emphasized by the facts that the relief of sickness and disease prevention are expensive and that disease is most prevalent among those least able to purchase health.

Partnership of poverty and disease.—In all countries the partnership of poverty and disease has been seen. Levasseur found that the death rate in the poorer sections of Paris was 31.3 per 1,000 per annum, as contrasted with 16.2 for “middle” class sections and 13.4 for the richest sections.¹ Robertson’s studies of an area in Birmingham, England, which was “peopled largely by unskilled artisans with low wages,” showed that the death rate in 1908 was 22.5 per thousand in this section, while that for the whole city was under 15 per thousand.²

Recent investigations tend to point unmistakably to the fact that poverty is the most important factor in causing infant mortality.³ In all campaigns for the prevention of disease poverty has always been the most formidable obstacle. In no instance is this better illustrated than in the campaign against tuberculosis. Realizing this fact, the Society for Improving the Condition of the Poor in New York City has adopted the method of removing entire families to a “home hospital” in order to eliminate the conditions of poverty.⁴

Poverty a result as well as a cause of disease.—But poverty is not merely a cause of sickness; it is also a result of sickness. Sickness is

¹ La Population Francaise, 1889–1902, Vol. II, p. 402.

² John Robertson, M. D.: Infant Mortality in Relation to Factory Labor, Transactions of the Fifteenth International Congress on Hygiene and Demography, Vol. III, Part II, pp. 947–948. It is interesting to note that Rountree, in his classic study of poverty in York, England, found that the death rate in the “poorest” section was 27.8, in the “middle” class section 20.7, and in the “highest” 13.5 (see B. S. Rountree: Poverty—A Study in Town Life, 1902, p. 205).

³ United States Department of Labor, Children’s Bureau: Infant Mortality—Results of a Field Study in Johnstown, Pa., p. 45. In families where the father earned less than \$521 a year, or less than \$10 a week, the infant mortality rate was 255.7, as contrasted with 134.7 for the community as a whole, and it was three times as high as in families where the father earned \$1,200 or more a year. In a similar investigation in Montclair, N. J., the Children’s Bureau found that the infant mortality rate in families where the income was less than \$12 a week was more than twice as high as in families where the income was \$23 or more a week. A study of infant mortality in Fall River, Mass., in 1913 showed that a higher rate was prevalent in the families of low-paid textile workers than in other families. (L. I. Dublin: Infant Mortality in Fall River, Mass., American Statistical Association Publications, XIV, 505–520.) Robertson’s Birmingham study showed that the infant mortality rate in families where the father earned less than a pound a week was 196 in 1910 and 211 in 1909, as contrasted with 127 in 1910 and 146 in 1909 in families where the father earned a pound or more a week. (*Loc. cit.*, p. 950.)

⁴ Poverty and Tuberculosis, Two Years of the Home Hospital Experiment, 1912–14. Publication No. 84, New York Society for Improving the Condition of the Poor. Two years of this experiment, during which a large number of entire families have been treated, have shown that “with these three items—a decent home, and adequate budget, and proper supervision—families afflicted with the ills flowing from tuberculosis and poverty can be rehabilitated,” p. 5.

so intimately related to destitution that it is often impossible to determine whether it is a cause or an effect. Records of the causes of destitution show that sickness is one of the most prolific causes. A recent study of the causes of destitution in 31,000 cases in 43 industrial localities in the United States developed the fact that charity relief was required in about 21 per cent of the cases because of the illness of the family breadwinner and that 18 per cent more needed assistance because of the illness of another member of the family.¹

Thus a vicious circle of economic disadvantages due to sickness and conditions causing sickness is established. Overwork and worry, insanitary housing and community surroundings, and lack of nutritious food are frequent causes of sickness. Sickness, in turn, reduces the family's economic status by entailing extra expenses and loss of wages, weakens efficiency, and demoralizes the worker. There can be little doubt that such a circle throws more wage earners on the scrap heap than accidents, increases the necessity for charity giving, burdens the state with delinquents, and helps to fill the army of casual laborers with derelict recruits.

III. RESPONSIBILITY FOR CONDITIONS CAUSING DISEASE.

With the relation of working and living conditions to the health of wage earners and their families so manifest, it is pertinent to point out that three groups are mainly responsible for adverse conditions, namely, the employers, the public, and the wage earners themselves. From this point of view, without attempting to discuss in detail so extensive a subject, it is necessary to indicate to some degree the extent of the responsibility of each group in order to arrive at a reasonable basis for cooperation in the relief and prevention of sickness.

CAUSES OF SICKNESS FROM THE STANDPOINT OF RESPONSIBILITY FOR THEIR REMOVAL.

Leaving heredity out of consideration, the causes of sickness among wageworkers and their families may be grouped, then, according to the responsibility for their control, as follows:

1. Conditions for which the employer and the industry are responsible.

¹ Reports of the United States Immigration Commission, vol. 34. Cities included in this study were chiefly smaller and middle sized industrial communities, New York and Philadelphia not being included. Nearly 62 per cent of the cases were native-born individuals and families, nearly 75 per cent of the men afforded relief were married at the time, and over 50 per cent included families where there were three or more children. According to the reports of the New York Board of Charities for 1910 nearly one-third of the 328,000 persons receiving relief had been rendered destitute because of sickness. Of 5,000 destitute families coming under the observation of the Charity Organization Society in New York City, three-fourths were found to be destitute wholly or partly on account of sickness. (E. T. Devine: *Misery and its Causes*, p. 204.)

2. Conditions for which the public, through its regulatory and welfare agencies, is responsible.

3. Conditions for which the individual worker and his family are responsible.

It is of course apparent that there are some conditions for which there is a joint or overlapping responsibility. For example, the public, as well as the employer, is responsible for conditions in places of work because the public occupies the position of a regulating power. With the acceptance of the principle that a state or a community can not progress without healthy citizens, the responsibility of the public has taken on a wider application, and in a corresponding degree the public has come to feel that employers generally have not measured up to their responsibilities. Reflexly, perhaps, there is a growing tendency among employers to realize that better provisions for the health of their employees are in accordance with sound business principles because they increase their employees' efficiency. Certainly the stimulus given to the adoption of precautionary measures against accidents by the enactment of compensation laws has accelerated this tendency.

Conditions for which employer and industry are primarily responsible.—In a broad sense it may be said that conditions of work which cause sickness or impairment of physical or mental vigor come within the field of the responsibility of the employer and of the industry. There are, of course, certain important qualifications. Irregularity of employment is a condition of work for which the employer is often only partially responsible, since the seasonal and cyclical fluctuations in industrial activity and the efficacy of employment agencies and of methods of vocational education and guidance are factors beyond, or largely beyond, his control. It has not been determined as yet where the responsibility for low standards of wages rests. Whether labor is a commodity the price of which is to be controlled by the unrestricted "natural" adjustments of its supply and demand or whether public welfare must require that labor be not employed except at wages sufficient and regular enough to maintain a healthful subsistence are still mooted questions. Certainly, in some instances at least, the level of wages has been the result of custom and of evolutionary developments in industry for which society at large is partially responsible. Again, where the employer is the owner of the houses in which his employees live and is the controlling force in determining their community environment, his responsibility evidently extends considerably beyond conditions in places of work.

But without going into a detailed discussion of the exact bounds of the responsibility of employers for the welfare of their employees under various conditions, the fact that such a responsibility is being recognized is the most important consideration here. There are many

evidences of a tendency for a very definite recognition wherever it is possible to set the limits of this responsibility. Employers' liability for accidents while at work is rapidly becoming a nation-wide practice. That the employer of labor should not endanger the health and lives of his employees by forcing them to work too many hours a day or under insanitary conditions and other conditions dangerous to health is a principle which has not only been enacted into law, but which has been upheld by the highest courts.

Of even greater significance is the fact that employers themselves are gradually coming to a fuller recognition of their responsibilities. So far as the tangible effects are concerned, it does not matter whether their recognition is based on principles of efficiency or altruism; the fact pertinent here is that more and more of them are going on the assumption that the modern factory should be so equipped and so operated that the least possible harm and the greatest possible good to the workers will result. Of perhaps greater importance than the various provisions for the workers' health in the form of "welfare work" is the growing tendency for employers to make contributions to the sickness insurance funds of their employees. Several large companies bear the expenses of administration of the sick benefit funds; some contribute from one-third to one-half of the funds; others provide for the entire amount. A growing number of employers are providing for physical examination and medical supervision.

These are but illustrations of a tendency on the part of many employers to believe that provisions to aid sick employees and to prevent disease, even though entailing the expenditure of large sums of money, are the part of business sagacity. Significant indeed, therefore, are the questions asked by Secretary Fred C. Schwedtman, of the National Association of Manufacturers, in his preliminary report on sickness and unemployment insurance to the president and directors of that organization:

Is not the prevention of occupational diseases the most important part of the industrial disease problem and is not this question of prevention the fundamental principle of all social legislation? This being so, could the National Association of Manufacturers adopt a more constructive and more efficient program than that of devoting its energy and ability to national conservation by prevention of needless industrial human and economic waste?

Conditions for which the public is primarily responsible.—Conditions for which the public is responsible may be defined as community conditions, or conditions common to all classes of citizens. These have attracted so much attention during the last decade or more in the discussion of the public health that it is hardly necessary to include a description of these conditions beyond that already given under the head of community environment.¹ It is of interest to note,

¹ See p. 24.

however, that only within recent years has the conception of the extent of these conditions become broader than that suggested by the term "nuisances"; the recent development of public health activities has come to include the treatment of any condition that causes disease, whether the disease affects the individual citizen or the entire population. Most important among these conditions, so far as they concern health, are housing, water supply, sewage disposal, impure food, and exorbitant prices of foods, misuse and unrestricted sale of drugs, insanitary state of streets, yards, private houses as well as of public buildings, carriers, and the like.

As has already been pointed out in the foregoing pages, the multitude of housing surveys in a large number of industrial centers have demonstrated the harmful housing conditions under which wage earners and their families actually live. The condition of congestion is, of course, one for which the public is not altogether responsible, since the number of persons who live in a room or a house is determined by their financial status, by their willingness to forego present comfort and to risk their health in their desire for future competence, and by their racial habits and solidarity. But lack of sewerage and water facilities, improperly constructed homes—these are some of the things for which the public is alone or very largely responsible, except in those industrial villages and camps owned and governed entirely by employers. Inadequate cleaning of streets, which are the playgrounds of the poor, improper methods of sweeping public thoroughfares, the absence of proper protection of food supplies, are some of the causes of disease among the wage-working population the eradication of which is distinctly within the province of the public. The relation of impure water to the spread of disease is thoroughly well known, and the public's duty with regard to the healthful supply of water is recognized. A similar recognition of public responsibility for a pure food supply and a cheap food supply is becoming established. The public's duty in the education of individuals in matters of health is no longer questioned.

Limitations upon responsibilities of employer and public.—If the causes of sickness among wageworkers may be classified according to the responsibility for their removal, it is logical to conclude that our present theories and practices place certain natural limitations upon these responsibilities.

The most general limitation at present upon the responsibility of the public grows out of conceptions of individual rights and the principle of private property. According to this principle, the individual citizen is held to be responsible for keeping the property he occupies in a condition which is not harmful to his neighbors. It is true that the public, through its governmental agencies, has in

recent years shown a tendency to relieve the individual of certain responsibilities. The tendency now, for example, is for the municipality to pave and keep clean the street, whereas once the individual property owner or occupant was held accountable. On the other hand, the municipality forbids in many ways the keeping of insanitary premises and expects the occupant to comply with the regulation. To state the limitation upon the public's responsibility in very general terms, it may be said that the responsibility of government lies chiefly in the enactment of health regulations for the individual to obey, except where it is clearly evident that it is best for the welfare of the public for government to step in and accomplish specific purposes by other means. The greater part of the burden of maintaining healthful conditions of living in the workingman's home thus rests upon the workingman himself.

In the same way, there is a general limitation upon the responsibility of the employer for the health of his employees. With certain exceptions, notably in industrial villages and camps, where the employer, for all practical purposes, occupies the position of the local government, the employer's responsibility for safeguarding the health of the wageworkers is confined to places of work. As a matter of better business, employers are coming to realize that it is profitable to pay a living wage to all employees; but unless the whole structure of our industrial system is reorganized we must assume that, with few exceptions, the responsibility of the employer for the health of the worker is naturally limited to the shop, the factory, and to places of employment in general.

Even within these limitations both the public and the employer have far to go before they do all that they can for the health of the wage earner. In spite of notable progress made in certain States and municipalities, and by certain employers, either of their own initiative or in obedience to regulatory mandates, the fight for conditions promotive, instead of destructive, of health has been and is still a hard one. After decades of unionism in certain trades and prolonged and bitter industrial strifes in a large number of industries, there to-day exist but a few instances where collective bargaining has resulted in the establishment of clearly recognized standards of health and definitely realized responsibilities.

Conditions for which the individual worker is responsible.—Because of the limitations upon the activities of employers and of the public in providing for sickness and preventing disease, the responsibility left to the individual is great. It is of fundamental significance that the individual responsibility is more difficult of fulfillment by the low-paid wage earner than by the well-to-do. The realization of this difficulty is seen in several attempts on the part of society to

aid the wage earner in meeting his responsibility. There are, for example, a large variety of movements which may be classified under the somewhat vague name of "welfare work," including efforts to supply the individual wage earner with the knowledge and the means to keep himself and his family in good health; there are certain forms of commercial and mutual sickness insurance plans; there are almost innumerable efforts of a philanthropic and charitable nature, varying greatly in their scope, method, and degree of success. Thus to the individual wage earner is largely left the responsibility for the healthfulness of the conditions under which he and his family live—his diet, the size and kind of house, clothing, heat, and the many other elements that enter into what is included in the phrase "his standard of living."

How far is he able to meet these responsibilities under present conditions?

INABILITY OF WAGE WORKER TO MEET HIS RESPONSIBILITY FOR MAINTAINING HEALTH.

The wage and income investigations, to which reference has been made,¹ seem to indicate that fully one-half of the people employed in the principal manufacturing and mining industries have not been able in recent years to earn an income sufficient to maintain a healthful standard of living. This fact is of so grave importance, however, that it needs to be interpreted in more concrete terms.

It is necessary to call attention to the well-known distinction made by economists between *money* wages or *money* income and *real* wages or *real* income. One must guard against the error of assuming that because wages in the United States are expressed in higher monetary figures they will purchase more of the necessities of life and make a more adequate provision for health than the lower wages in other countries. The cost of living and of providing against sickness in the United States must also be taken into consideration. The adequacy of wages or income is measured not by the dollars and cents that make up the weekly or monthly amount in the pay envelope, but by what the contents of the envelope will purchase.

Adequacy of wage earner's family income to maintain health.—It seems to be generally agreed that the minimum cost of maintaining a healthful standard of living for a normal family of five persons—wage-earning father, wife, and three dependent children—is about \$800, present prices considered.² In order to avoid all possible exaggeration, let us place this minimum cost somewhere within the range of \$700 and \$800. The sufficiency of this standard may best be illus-

¹ See p. 34.

² See p. 35.

trated by the manner in which it has been found to be actually spent by wage earners' families. The budgetary researches of recent years show approximately the following disposition of the income of several thousand typical wage earners' families, the annual family income being between \$700 and \$800 and the average size of the family being five persons:¹

TABLE 4.—*Amount expended annually by typical wage-earners' families.*

Items of expenditure.	Annual amount expended.	Per cent of family income.	Items of expenditure.	Annual amount expended.	Per cent of family income.
Food.....	\$360	47	Fuel and light.....	\$41	5
Rent.....	126	17	Health.....	17	2
Clothing.....	123	16	Sundries.....	98	13

It must be evident that the average wageworker's family with an income of \$750, if it must spend \$650 on food, rent, clothing, and fuel and light, has very little surplus available for extraordinary expenses. Out of the remaining \$100 must come the funds for amusements and recreation, books, papers, and magazines, lodge and union dues, benefit and insurance premiums, sickness, upkeep of household and kitchen furnishings, and the hundred-and-one incidental expenditures that are common even to the most frugal households. A death in the family is a heavy expense; the birth of an additional member of the family is a cause, not only of lessened family income in families where the wife is a wage earner, but also of immediate expense and the promise of increasing cost in the future. For we are speaking of the "average" family with an income of \$700 to \$800 a year, which is considered adequate if everything "goes right." But sometimes things "go wrong."

Investigations of a large number of representative workingmen's families have shown that sickness causes considerable reductions in family income.² These investigations have also shown that the larger the number of dependent children, the less is the amount available for providing healthful environment and for sickness.³ In

¹ For references to budgetary sources, see p. 19. The above proportions have been found to be approximately the same in all recent investigations of the budgets of workingmen's families having the range of income noted.

² As already pointed out, a review of available statistics seems to warrant the conclusion that ill health causes much of the unemployment of wageworkers. The seriousness of this loss of working time and therefore of the loss of wages may be illustrated by referring to the data obtained in the Federal Bureau of Labor's investigation of over 25,000 heads of workingmen's families. Over 11 per cent of them were idle during the year on account of sickness alone, and nearly 4 per cent more were idle during the year on account of sickness combined with other causes. These breadwinners lost, on an average, nearly eight weeks during the year on account of sickness and a much longer time because of sickness combined with other causes. (Eighteenth Annual Report of the United States Commissioner of Labor, p. 45.)

³ The Bureau of Labor's investigation referred to above secured data for over 11,000 families in which the husband was the wage-earning member, the mother engaged in no remunerative occupation, and in which

the period 1900-1913 the increase in the cost of living, particularly in the cost of food and rent, has been an additional factor. It tends to affect most seriously the poorer families. Comparisons of wage and retail food price statistics indicate that the increase in food prices during the same period has been considerably greater than the increase in wages.¹

As the result of the marked increase in the cost of living, there is every reason to believe that the low-paid, unskilled wage earner has been seriously handicapped in his efforts to provide a healthful standard of living for his family. He is less able to take advantage of voluntary insurance and sick-benefit schemes provided by commercial companies, fraternal orders, and unions. In times of sickness he is frequently forced to resort to free treatment in public or private institutions.

A review of the facts, therefore, suggests the conclusion that the policy of leaving to the low-paid wageworker so great a responsibility for providing for sickness and for safeguarding the health of

there were not more than five dependent children and none over 14 years of age, no other dependent members, and no boarders, lodgers, or servants. All of these families had expenditures for rent, fuel and light, food, clothing, and sundries, and were regarded as "normal" families. It was found that in families where there were more than two children the annual surplus averaged less than \$20, and in families where there were five children there was an annual average deficit. The statistics clearly showed that the larger the family, the less were the expenditures for rent and "sundries," including health, and the greater were the expenditures for clothing and food. Although it is obvious that the chances of sickness and the need for preventing disease are greater in large than in small families, the larger families were found to possess less financial ability to make provisions for these contingencies and for these purposes. (Ibid., pp. 90, 572-577.)

¹ See the discussion by I. M. Rubinow, chief statistician Ocean Accident and Guarantee Corporation: The Recent Trend of Real Wages, American Economic Review, December, 1914, pp. 793-817. The following table of index numbers was used by Dr. Rubinow to compare the trend of wages with that of prices, 100 being the average wages or prices from 1890 to 1899:

Computation of index of real wages, 1900-1912.

Year.	Fulltime weekly earnings per employee.	Retail prices of food.	Purchasing power measured by retail prices of food.	Year.	Fulltime weekly earnings per employee.	Retail prices of food.	Purchasing power measured by retail prices of food.
1900.....	103.2	103.0	100.2	1907.....	123.0	125.9	97.7
1901.....	105.0	108.5	96.8	1908.....	121.4	130.1	93.0
1902.....	109.1	114.6	94.3	1909.....	122.6	137.2	89.4
1903.....	111.7	114.7	97.3	1910.....	125.7	144.1	87.2
1904.....	111.6	116.2	96.0	1911.....	127.2	143.0	88.9
1905.....	114.8	116.4	98.6	1912.....	131.6	154.2	85.3
1906.....	117.9	120.3	98.0				

The food price statistics used by Dr. Rubinow in his computations are those regularly published in the retail price bulletins of the Bureau of Labor Statistics. The wage statistics are those regularly published by the Bureau of Labor Statistics, and cover cotton goods, woolen goods, silk, boots and shoes, knit goods, lumber, millwork, furniture, building trades, bakers, marble and stone cutting, foundry and machine shops, and printing. Thus the tendency toward exaggeration of the upward trend of wages is evident, since a large number of purely skilled trades are included and many of the most extensive unskilled and poorly paid industries are omitted.

himself and his family, as is left to him under present conditions, is putting upon him a burden that he can not successfully carry. It expects of him that he shall provide for almost certain contingencies of sickness in the future when he lacks even the means of a healthful existence in the present. It assumes that he, the least experienced in the methods of preserving health and the most ignorant concerning the dangers of disease, will seek for himself the most efficacious measures of prevention, and it does this after handicapping him and his family with the accumulated burdens that the past indifference and mistakes of society have placed upon him.

HANDICAPS OF THE MEDICAL PROFESSION.

In the face of such a problem as has been suggested in the foregoing pages, modern methods of medicine and surgery and of hospital and home care of the sick and the modern science of disease prevention are seriously hampered.

The wage earners and their families who are at an economic disadvantage in obtaining healthful conditions of living are also at an economic disadvantage in securing prompt and proper attention in times of sickness. Only as paupers and at a loss of self-respect can this class of workers enter our hospitals and our clinics and receive treatment. They constitute the "charity patients" of thousands of physicians who are often forced to make serious financial sacrifices in order to uphold the ideals of their profession. Many wage earners, too proud to ask for charity treatment, get either no treatment at all, treatment too long delayed, or treatment of dubious value from quacks, patent medicines, druggists, and ignorant midwives. The results of this lack of treatment or improper treatment are that many die every year who could be saved, untold numbers become permanently disabled and unable to work, their wives become invalids from no care or from improper care during confinement, and thousands of their children die within the first year from lack of intelligent care.¹

Whatever may be the causes of the situation, it can not be denied that the physician is practicing among the wage-earning population

¹ The situation has been well expressed by Dr. Christopher Addison, of the University of London. The State "confronts the medicinal profession," he said, in referring to conditions in England, "with 600,000 ill-nourished children in our elementary schools, with 300,000 who have adenoids, etc.; it deplores the waste of infant life; it points to an army of factory girls and women workers with anemia, chronic indigestion, etc.; and it is beginning to say to the medical profession, 'We want these things altered. We want these people to be healthier.'"

"The State, however," asserted Dr. Addison, "has no right to ask of any class of men to do the impossible." For "these anemic girls, these dyspeptic women, are not to be put right by medicines alone. The hours they work, the conditions they work under, are often also concerned, as well as their habits of life and diet. It is useless to tell people to take proper food who have not the means of obtaining it, and who often enough are paying what should be an economic rent for a decent home, but are obtaining only tenement quarters without any facilities for decent life."

in the United States against heavy odds and that he will not be able to attain the greatest measure of success in the relief of the sick and in the prevention of disease until better organization and cooperation of all of those concerned in the improvement of conditions are brought about.

**NEED FOR MORE EFFECTIVE METHOD OF DEALING WITH PROBLEM OF WAGE
EARNER'S HEALTH.**

From a survey of the factors that enter into the problem of the wage earner's health and of the efficiency of the existing agencies at work for its solution it is logical to conclude that a program of remedial effort is needed that will better meet the situation. Such a conclusion is not unjust to the efforts that are being made by employers, by the public through its various governmental health agencies, by the workers' organizations, and by others. The activities of each of these groups are circumscribed by the natural limitations of their fields of work and service, as well as by other limitations. The need is for some means of providing for and stimulating co-operative effort on the part of all whereby these limitations may ultimately be removed and the worker's ability to meet his own responsibility for health be increased.

Not only must such a program correlate and strengthen the efforts that are now being made, but it must take into consideration as a basic fact that under existing conditions a responsibility is placed upon the wage earner which he can not be expected to meet. It must face the fact that destitution and sickness go hand in hand. If such a program is to be adequate it must relieve the worker of some of this responsibility, not only for his own good but for the good of his employer and for the good of society in general. It must be based on the cooperative action of those who are responsible for the conditions that govern the health of the working population of the Nation. It must embody democratic principles in its maintenance, control, and administration. It must employ a practicable and just method of distributing the cost of sickness and bring within the reach of modern medical science those who now can not enjoy its benefits unless they are aided by private and public charity. It must provide a more definite and a more powerful incentive to existing forces for the prevention of ill health and disease.

**IV. COOPERATIVE ACTION NEEDED FOR RELIEF AND
PREVENTION OF SICKNESS.**

This brief review of the prevalence and cost of sickness among the wage working population indicates clearly the need for more comprehensive measures for the relief and prevention of disease. The influence of industrial conditions, which often increase sickness

among employees, emphasizes the need for special remedial measures which will be directly connected with industry. The nature of the responsibilities for disease-causing conditions among the industrial population suggests that they are divided among three groups—employer, employee, and public. With such division of responsibility and with each group working independently, without coordination and often with duplication of purposes and efforts, the best results can not be obtained. They can be obtained only by the cooperation of the three responsible groups.

The experience of foreign countries indicates that a comprehensive governmental system of health insurance will meet this need by securing cooperation of the public, the employers, and the employees, and will give to each a continuous stimulus for the prevention of sickness among the wage-earning population.

COOPERATION AMONG EMPLOYERS, EMPLOYEES, AND PUBLIC.

Cooperative or collective action is not new in the field of industry in this country. Groups of people, once opponents in bitter disagreement and strife, are gradually adopting the principle of cooperation. Instead of aggravating the loss and waste that attend unnecessary conflict and of delaying the fulfillment of aims common to all, they are coming to seek a basis on which a common endeavor can be made. There is probably no more conspicuous example than the trade agreement. In a number of industries the unions, the employers, and the public are acting together in a way which is bringing prosperity to the industries, a greater degree of satisfaction to the employees, and better service to consumers. It was the recognition of the responsibility of all concerned which laid the basis for the success of conciliation and arbitration in the garment trades in New York City, as well as for the improvement of sanitary conditions in the shops. The same view of the situation in railroad disputes has prevented the trade paralysis of the country more than once. In the pottery industry, as shown by testimony at the hearing of the Federal Commission on Industrial Relations in Philadelphia,¹ cooperative effort has resulted in the maintenance of a joint health committee, composed of three manufacturers and three workmen, which plans and enforces sanitary regulations and satisfies the State commissioner of labor that bad conditions are eliminated.

INSURANCE A METHOD OF COLLECTIVE OR COOPERATIVE ACTION.

Experience has shown that insurance is an efficient method of cooperation. As defined by practically all authorities, insurance is primarily a method by which a group of persons, each singly in

¹ Philadelphia hearings, Witness Hutchins, pp. 62-67.

danger of some loss the incidence of which can not be exactly foreseen, can distribute such loss, when it occurs to any of them, over the whole group and in such a way that the burden of expense will be lightened of its most serious effects. Secondarily, and of equal importance, insurance means that the strongest of incentives—that of lessening cost—is given to efforts to diminish the frequency and the seriousness of losses. In this latter sense insurance is a *preventive* measure of a positive and direct sort.

Insurance as a preventive measure.—It can not be denied that fire insurance has been one of the most potent factors in the now well-organized movement for the prevention of fires. Marine insurance has resulted in more rigid inspection of vessels, the erection of lighthouses, and in many other measures designed to lessen the chance of wreck. Liability and compensation legislation—which is but another name for the insurance of employees against accidents—has resulted in the nation-wide movement for “safety first.” Unemployment insurance systems are so closely connected with labor exchanges that they have already shown beneficial results in lessening irregularity of work wherever they have been adopted. Health insurance in Germany, where it has been in operation for a quarter of a century, has admittedly exercised a positive influence upon the prevention of disease which is regarded as equal to, if indeed not more important than, the distribution of money benefits and the treatment of disease. Experience has shown in all instances that while the distribution of cost is primarily the *method*, prevention is primarily the *purpose* of insurance, and certainly its *result*.

GROWTH OF SOCIAL INSURANCE.

The adaptability of the insurance method in the solution of modern economic problems is unmistakably shown in the spread of “social insurance” in countries whose governments embody widely different political ideals. As soon as certain economic risks have been recognized as menacing the wage worker and his family, the insurance method of meeting the risks has been used. These economic risks may be generally classified as those causing the death of the breadwinner in a family, the physical inability of the breadwinner to perform labor, and his inability to find employment. For a large proportion of the wage earners of any country these risks are too great to be provided for by individual effort and too little appreciated to be provided for even if the individual were able to do so. Hence, social provision through the distribution of loss has been found to be necessary. This kind of social provision has come to be known as “social insurance.”

The recognition for the need of provisions of this character has been followed in every important modern industrial nation, with the exception of the United States, by various systems of social insurance. Even in this country accident insurance in the form of workmen's compensation is rapidly spreading.¹ Accident insurance for workers has been established by governments throughout Europe and in many of the British colonies. Old-age insurance is established under governmental authority and is subsidized by the Governments of Italy, Belgium, Servia, and Spain, while old-age pension systems have been established by the Governments of Great Britain, Denmark, Iceland, France, Australia, and New Zealand. Unemployment insurance is a governmental system in Great Britain and is rapidly being adopted in many European cities. Health insurance is probably the most prevalent form of social insurance.

Growth of health insurance in Europe.—The extent to which European governments have encouraged and provided for health insurance is a fact which has not been fully appreciated in the United States. Voluntary health insurance systems have been subsidized by the Governments of France, Belgium, Denmark, Sweden, and Switzerland. But more significant as an evidence of the recognition of the efficacy of health insurance is the fact that compulsory systems have been established in Germany, Austria, Hungary, Norway, Great Britain, Servia, Russia, Luxemburg, Roumania, France (for miners, seamen, and railway employees), and Italy (for railway employees).

It is important to note that, while the growth of private and commercial health insurance plans, which preceded in nearly all instances the other systems, proved the great need of health insurance, subsidization by European governments not only further showed the need for health insurance, but was an admission that private systems had failed to meet the situation. According to the experience in other countries as well as in the United States, private and commercial health insurance has failed to afford the relief and lighten the burden in the case of workers who stand in the greatest need. Subsidized health insurance, experience has shown, has also failed to meet the situation, because its good results are not universal. Voluntary health insurance, whether subsidized or not, does not reach the low-paid workers, the very group who are in the greatest need of protection. State systems of health insurance which provide that all workers are entitled to benefits are the only systems which have reached all groups and provided universal protection.

¹ Workmen's compensation laws are now in force in 31 States and in Alaska and Hawaii.

Growth of health insurance in the United States.—In this country we are in the first stage in health insurance. No State, municipal, or other government in any way provides for or aids health insurance. There are, however, large numbers of private systems, such as mutual benefit associations and other societies which provide for health insurance, in addition to various employers' schemes which enable employees to have funds in times of sickness, trade union benefits, and commercial insurance companies with health insurance policies. These agencies may be classified as follows:

a. Trade unions: (1) National; (2) local.

b. Employers' organizations for benefit of employees: (1) Railroad funds; (2) establishment funds.

c. Mutual societies: (1) Fraternal orders; (2) local lodges; (3) general benefit societies; (4) special sick benefit funds.

d. Commercial companies operating for profit or on the mutual principle: (1) Industrial insurance companies; (2) casualty companies doing industrial health insurance.

The number of individuals in these various forms of voluntary health insurance plans can not be exactly estimated on account of the lack of sufficient data, but the total will undoubtedly be far beyond casual approximations. Dr. Rubinow, whose classification of the various health insurance agencies has been given above in a modified form, made the following estimates for 1907:

TABLE 5.—*Sickness insurance for wage workers in the United States, 1907.*

Form of organization.	Number of funds.	Number of workmen covered (approximately).	Form of organization.	Number of funds.	Number of workmen covered (approximately).
National unions.....	19	375,000	Railroad funds.....	31	300,000
Local unions.....	346	100,000			
Industrial benefit funds.....	35	55,000	Approximate total.....	805	1,130,000
Establishment funds.....	374	300,000			

The estimated total expenditure for temporary disability was \$4,480,000. "These figures," comments Dr. Rubinow, "are not staggering if they are compared with the 15,000,000 insured in Germany, nearly 25,000 funds, and expenditures of \$70,000,000 for sick benefits. They are not likely to look very hopeful when compared with the nearly 20,000,000 persons engaged in manufactures, mechanical pursuits, trade and transportation, and personal service"¹ in the United States. No estimate is made of the number of workmen insured in other organizations than those enumerated by Dr. Rubinow, but a considerable proportion of workers are insured in funds operating

¹ I. M. Rubinow: Social Insurance, p. 292.

especially among the foreign-born and colored population. Some typical examples of such organizations were reported by the Federal Immigration Commission.

In one steel manufacturing town alone, that commission reported that there were approximately 5,000 members of benefit societies out of something like 12,000 or 14,000 wage earners.

These fragmentary estimates and instances, however, indicate two important facts:

First, that health insurance is more and more coming to be looked upon by employees and employers alike as a practicable method of dealing with the problem of the cost of sickness.

Second, that inasmuch as the cost of the insurance under the existing voluntary plans in the United States is paid almost altogether by the employees, only those who are able to afford to make the payments are in the position of receiving the advantages that accrue.

In other words, so far as they are able, **wageworkers are rapidly adopting health insurance of their own accord.** A constantly growing number of employers are inaugurating establishment funds which are largely supported by their employees. Commercial companies are finding their health policies more and more popular in spite of the relatively heavy cost to wage-earning holders. The features of these voluntary plans will be referred to in greater detail elsewhere in this report; what is worth emphasis here is the unmistakable tendency on the part of all concerned—the worker as well as the employer, the individual as well as the State—toward the adoption of the insurance principle as the most practicable and the most efficient method of attacking the problem of sickness. As Prof. Chamberlain has pointed out, health insurance is “already an accomplished fact in the United States, but is insufficient in amount and wrong in its methods and purposes. * * * Contribution of employers is already accepted in principle; cooperation of employer and employee is established and growing. The question of sickness insurance is therefore a problem of organization of existing forces and making use of existing resources and admitted principles rather than the introduction of a dangerous novelty.”¹ Or, as Dr. Rubinow has said, “a sickness insurance law, even in one State, can do more to eradicate poverty, and is therefore a greater social gain, than a dozen organizations for scientific philanthropy with their investigations, their sermons on thrift, and their constant feverish hunt for liberal contributions.”²

¹ Joseph P. Chamberlain: Address before the seventh annual meeting of the American Association for Labor Legislation, December, 1913, *American Labor Legislation Review*, Vol. IV, No. 1, March, 1914, p. 72.

² I. M. Rubinow: *Social Insurance*, p. 297.

V. HEALTH INSURANCE: A HEALTH MEASURE.

Any system of health insurance for the United States or any State should at its inception have prevention of sickness as one of its fundamental purposes. This country should profit by the experience of European countries where, after a long period of evolution, prevention is being recognized as the central idea necessary if health insurance is to attain its greatest success in improving the health and efficiency of the industrial population.

With the cooperative principle so generally recognized in industry and with the application of insurance as a method for the relief of sickness among wage earners so generally accepted in Europe and to some extent in America, the question naturally suggests itself: Can health insurance be so developed and coordinated with other agencies as to become an effective public-health measure without imposing a new policy on this country which is not in accord with its ideals and institutions?

Up to the present time, health insurance systems have not reached their highest development as public-health measures because they have been adopted more as methods for relief than for prevention of disease. It is true that in Germany many evidences are found where prevention is beginning to be considered the primary object. In Great Britain, with a few exceptions, health insurance is a relief measure. In fact, it has had very little connection and has been poorly coordinated with other health agencies. To obtain the highest degree of success in America, it would appear that health insurance systems should be very closely correlated with national, State, and local health agencies. If these agencies are at present inadequate, they should be enlarged and strengthened instead of attempting to create new and independent health agencies.

Without entering into a detailed description of the many health insurance plans, it is necessary to summarize the important features in all and to discuss their advantages and defects in order to point out the principles which should be embodied in any system proposed for this country and to show how each feature can be utilized to develop the greatest success in disease prevention.

BENEFITS.

The best-developed systems of health insurance provide for three kinds of benefits to insured persons:

1. Cash payments to insured persons for disability due to sickness, to nonindustrial accidents, and to childbearing by the beneficiary, for periods extending as long as six months.
2. Cash payments for deaths of insured persons due to sickness or nonindustrial accident sufficient in amount to cover funeral expenses.

3. Medical benefits to insured persons, which include adequate medical and surgical care, medicines and appliances in home, hospital, sanatorium, or physician's office, beginning usually with the first day of disability, whether disability be due to sickness or nonindustrial accident or childbearing of insured person or wife of insured person, for a period of six months unless otherwise extended.

The benefits provided in existing plans in the United States, besides being more expensive to the insured than those under European systems, are more limited. There are practically no plans with cash and medical benefits combined, and maternity benefits are seldom provided. The duration of the benefits is in some cases limited to 13 weeks or less. The British national insurance act does not provide a death or funeral benefit, and the omission of this important provision resulted in the selling of death-benefit policies at exorbitant rates by commercial insurance companies which, under the act, had organized "approved societies" among their own policyholders for the purpose of conducting health insurance according to the provisions of the national system.

EXTENSION OF HEALTH INSURANCE TO ALL WAGE EARNERS.

In the governmental cooperative systems of Great Britain and Germany all workers in all industries and all occupations are insured and receive the benefits. In the United States, on the other hand, those who need financial assistance the most and who stand in the greatest need of better health conditions are seldom insured. The advantages of health insurance are out of the reach of practically all workers other than the highest paid, except in a comparatively few industrial establishments where membership in the so-called mutual sick-benefit funds is compulsory upon all employees and where oftentimes the workers are restive under an administration of the funds which they feel to be paternalistic. As a general rule, only those workers in this country who are able to pay all of the cost of carrying insurance are able to obtain its advantages, and the cost of operation of health insurance, especially in commercial companies, necessitates a premium which contains a substantial profit to the company and which can be afforded only by the better-paid wage earner. The great mass of low-paid, unskilled workers are seldom found among those insured in union, establishment, mutual society, and commercial insurance company funds.

As constituted and practiced in the United States, therefore, health insurance practically leaves the problem of the health among low-paid wageworkers untouched. It is not going too far to say that the situation in the United States at present is not nearly so good as the situation in Great Britain prior to the passage of the national insurance act. Even in Great Britain, where the commercial and

mutual health insurance organizations had probably reached a greater development than in any other country, less than half of the wage earners were benefited by them. This situation was described by Mr. David Lloyd-George, in his well-known speech in the House of Commons in 1911, in the following words:

What is the explanation that only a portion of the working classes have made provision against sickness? Is it that they consider it not necessary? Quite the reverse. In fact, those who stand most in need of it make up the bulk of the uninsured. Why? Because very few can afford to pay premiums continuously which enable a man to provide against these contingencies * * *. There are a multitude of the working classes who can not spare that, and who ought not to be asked to spare it, because it involves the deprivation of the children of the necessities of life.

Prior to the passage of the national insurance act, thousands of health-insurance policies lapsed every year in Great Britain among the wage-earning policyholders, thus occasioning a real loss to them because they found themselves unable to continue the policies until they received benefits. No one will deny that the same thing has occurred and is occurring every year in the United States. The reason for it is not hard to explain when it is remembered that a very large proportion of workingmen's families are living on a very narrow margin of subsistence; so narrow, in fact, that the continuous payment of commercial insurance premiums is plainly impossible. The situation, involved as it is in the entire question of disease prevention as well as of the care of the sick, is of too much public importance to be left to commercial organizations. It is essentially a public-health matter. Commercial companies have served a useful purpose in providing health insurance for the better-paid workers, but they have not reached and never can reach the lower-paid workers.

DISTRIBUTION OF COST AMONG EMPLOYEES, EMPLOYERS, AND PUBLIC.

In European health insurance systems the principle has been thoroughly established that the cost of maintenance, or the total payments of premiums, is shared by employers and employees and to some extent by governments. Under the British National Insurance Act, employers pay three-ninths, employees four-ninths, and the Government two-ninths of the contributions to the health insurance fund for males. The proportion differs slightly for female insured persons. In the German system of sickness insurance, as a general rule, employers contribute one-third and employees two-thirds of the sickness insurance fund, while the Government bears the expense of governmental supervision. In some instances employers pay as much as one-half of the premiums of their employees.

In this country, on the other hand, the burden of the cost of health insurance is borne almost entirely by the wageworker. In consequence he is expected to bear the expense of meeting a responsibility which is not wholly his, but which should in part be shared by the public and the employer.

The employees' share.—It would be a serious error, however, for the cost of health insurance to be borne entirely by employers or by employers and the public. The employee should in no sense of the word be a ward. The expense of maintenance should be divided as nearly as possible according to the degree of responsibility, and it is but just that employees should pay the largest share, as they do in European countries, in view of the consideration that they receive the greatest direct benefits.

A governmental system of health insurance would hardly impose an additional burden upon the insured persons. On the contrary, it would probably materially reduce the amount they are now paying in medical bills and small life insurance premiums. It appears from budgetary studies that workingmen's families spend from 30 to 90 cents per week for health and small life insurance policies.¹

The experience in European countries in health insurance systems in which employers, employees, and the government are joint contributors, indicates that under a similar system in this country the expenditure by employees of the minimum amount (30 cents per week) stated above would provide not only adequate medical care and a small life insurance policy, but also a substantial cash payment during illness for a period not to exceed 26 weeks. A preliminary study of existing systems in the United States indicates that a governmental system could, at a weekly cost of 25 cents to the employee, 20 cents to the employer, and 5 cents to the Government, or a total of 50 cents per insured person, provide a minimum cash benefit for sickness of \$7 a week for a maximum period of 26 weeks and a death benefit of \$100 in addition to medical and hospital service. Thus the worker would have to pay only a small proportion of what he is now spending on insurance and health, and at the same time he would receive much greater benefits and obtain indirect results of an untold value from the cooperative action of all agencies in the prevention of disease.

The employers' share.—There can hardly be any doubt that the employer should bear a part of the expense of maintaining the health-

¹ The Bureau of Labor's studies of the expenditures of 2,567 families in 1901, carefully selected as representative, disclosed that 65.8 per cent of them had expenditures for life insurance premiums averaging \$29.55 per annum per family, while 76.7 per cent had expenditures for sickness and death averaging \$26.78 per family per annum. The intensive studies conducted in New York City by Prof. Chapin showed that workingmen's families with annual incomes between \$600 and \$999 spent from \$26.83 to \$47.01 a year for health and insurance. The insurance amounted to little more than burial insurance, as only a very small number of the policies were for more than \$50 or \$100.

insurance fund of his employees, not only because he is responsible for many of the conditions that govern the health of his employees, but because he reaps some of the important results. It is an uncontradicted proposition that any measure that will maintain the health of the worker is a positive benefit to the employer. In fact, as already pointed out, there are some employers in the United States who have recognized the truth of this principle to such an extent that they pay for the entire cost of a sick fund for their employees. There are numbers of employers who contribute varying proportions of their establishment funds. In addition, many employers are paying considerable amounts in subscriptions to charities and to the maintenance of free clinics and hospitals, and the like. The establishment of a definite principle of sharing in the maintenance of the health-insurance fund places all employers on an equal footing and compels all to meet their obligations in a businesslike and democratic manner, and not on a basis of charity or for the purposes of controlling or stabilizing their labor supply.

The public's share.—The responsibility of the public has already been emphasized, and its failure, under present conditions of public-health work, to discharge this responsibility toward the wage-earning population has been pointed out. The sharing by the Government in the cost of maintaining the health-insurance fund for wage earners will enable the public to meet its responsibility in a more definite and direct manner. Judging from the heavy burden the public already bears in its present inadequate efforts to meet its responsibilities, it is safe to say that the American public, as a contributor to health-insurance funds, can perform its duties to wage earners at much lower financial expense to itself and with infinitely less loss of self-respect to the wage earner than at present. The public has the right to be a contributor on the ground that health insurance is a measure distinctly for its own welfare. One-third of the "public" are wage earners. The immense sums that are already being spent annually in public and private charities, in relief work, in caring for the victims of the conditions that cause ill health suggest the uneconomical and undemocratic nature of the methods now employed, as well as the fact, which the public has come to realize, that it does have a real and necessary responsibility to meet.

HEALTH INSURANCE AS A HEALTH MEASURE.

Financial incentive for lessening ill health.—The most successful health-insurance systems of Europe are based upon the principle of joint support of the fund by employers and employees, and to some extent by the public. This cooperation does not stop with the financial support of the fund, but extends to its control and administra-

tion. The evil of permitting sick-benefit funds to be controlled by employers, while supported wholly or in part by employees, does not prevail in European systems. Employers and employees and Government are represented on the governing bodies, both national and local, according to the proportions of their contribution, thus insuring democracy in control and freeing the systems from any taint of "relief" or "charity." The national health-insurance systems are governed by commissions on which employers, employees, and the Government have representatives. Regulations are made by these commissions, and the administration is carried on by governmental officials in accordance with the policies and regulations thus formulated. Even in local administration the joint-government principle is applied in accordance with the proportions of contribution made by employees and employers.

Aside from the value of bringing employer and employee together for a common purpose, there is a specific advantage in the incentive afforded by financial participation. The rate of payment of contributions or premiums in any trade, industry, or locality should be determined by the amount of sickness in that trade, industry, or locality. The lower the sick and death rates, the less would be the premium necessary to provide for sick and other benefits. It is reasonable to expect that when an establishment or trade finds that its premium is much greater than in other establishments or trades an effort will be made to find and remove the unhealthful conditions that cause the excessive rates.

It must be apparent, therefore, that there is thus afforded a strong incentive—that of self-interest expressed in terms of money—for the employment of measures to reduce the hazard of disease and thereby lessen the cost of insurance. The employee will have in mind the saving made possible by reducing the hazards of sickness so far as they are under his control, and he will be stimulated to report cases of malingering or of insanitary conditions. The rate of contribution paid by employers has been made large enough in the most successful European systems to afford the employer the same sort of an incentive to provide for sanitary conditions of work and to cooperate with other agencies in removing the causes of disease among his employees. Since contributions to health-insurance funds by national or local governments are in the nature of a tax upon the public, there is afforded an additional stimulus to public measures that reduce the cost of sickness. When a community suffers from an excessive sick rate and taxes are increased in order to meet the public's share in local insurance funds, the health of the wage earner will become a local issue of much greater interest than it is at present.

Correlation of all health agencies.—The value of linking the health-insurance system with the health-promoting agencies is thus sug-

gested. The principle of joint support of the health-insurance fund has been found to supply a very definite incentive to the prevention of disease. Should there not be an intimate connection between the health-insurance system itself and the agencies that promote health?

It is believed that this can be done in three ways: (1) By providing an efficient staff of medical officers detailed from the Federal or State health departments, but subject to the regulations issued by the commission; (2) by providing a fair and sufficient incentive for the active cooperation of the medical profession; and (3) by providing for a close cooperation of the health-insurance system with State, municipal, and rural health departments and boards.

Medical staff detailed from Federal or State health departments.—Without an efficient medical staff closely related to the Federal or State health agencies any system of health insurance will fail of its best results. Without such a relation it would not be a health measure but merely a relief measure—a serious mistake, as shown by the experience of European systems.

To provide such a medical staff the health departments would have to be greatly enlarged and strengthened. The medical officers would have to be subject to the regulations of the health-insurance commission, but at the same time should be vested with all the authority of the health departments. In such a dual capacity there could be no conflict, because their first duty in both capacities—the prevention of disease—would be identical.

Cooperation with medical profession.—A proper correlation of health-insurance systems with the medical profession is absolutely necessary, both to the success of health insurance and to the effectiveness of the profession in its legitimate field of service. The lack of this correlation in the German and British systems has been a serious defect. The German Workmen's Insurance Code provided that the local "Funds," which correspond to the British "approved societies" and to trade union and mutual societies in the United States, should administer the medical benefits. The results were that members of the "Funds" were often restricted in their selection of physicians and that often inefficient physicians were selected. Dissatisfaction was felt both by members of the "Funds" and by members of the medical profession, in the latter case attaining such proportions as to cause a "doctors' strike." The British national insurance act attempted to avoid this defect by providing that the local Government insurance committees should administer the medical benefits in such a way as to allow the individual insured person to select any physician on the "panel" or registered list. After considerable disagreement as to fees and other details, a compromise was effected which resulted in the registration on the "panels" of nearly all the physicians in each locality, and every insured person could thus have his family

doctor attend him and pass on his rights to receive benefits from the sickness insurance fund. This situation, while satisfactory to physician and insured person, caused a serious and improper drain upon the fund by greatly increasing the number of malingerers, since the family physician was entirely too complaisant in signing disability certificates entitling his patients to benefits. To meet this defect medical referees have been appointed in some localities to investigate and sign all certificates of doubtful character. This plan of medical referees seems to have proven successful wherever tried. If, as suggested above, a staff of medical officers is provided, one of their first duties should be to act as medical referees and provision should be made that no benefit be paid except on certificate signed by them. It is not necessary to point out the possibilities of disease prevention which may be expected by the visits into the home of every sick beneficiary of a skilled sanitarian in addition to the attention of the family physician.

The necessity for enlisting the active cooperation of the medical profession is only too evident in the fact, which has been the subject of frequent comment, that physicians should do more than they are doing at present for the prevention of sickness. The freedom of choice of physicians on the part of insured persons and the payment of the physicians on a capitation basis regardless of whether their patients are sick or well should offer every incentive to physicians to keep their patients well and to endeavor to please by rendering their most efficient service. Furthermore, since the low-paid wage-workers would no longer be on their list of charity patients, the physicians' incomes would be increased and regularized. As there would be no extra expense, the wage earner would seek the advice of his family physician earlier and oftener in case of all ailments and thus aid the physician in preventing serious diseases. The cooperation of physicians with agencies for promoting healthful living and working conditions among wage earners would widen their own field of interest in preventive medicine and practice.

Cooperation with local health agencies.—The third way in which a health insurance system can be linked with the existing agencies of health promotion is by the closer cooperation of the control and administration of the system with local health departments and boards. The problem of the health of the wage earner and his family is so intimately bound up with the general problems of public health that the mistake of permitting local health departments and boards and the health insurance system to operate independently of each other is a vital one in hindering the success of disease prevention. This mistake has been amply evidenced in the failure of the British health insurance system to utilize the existing public health

agencies to a greater degree. With a staff of medical officers detailed from the national or State health departments, as suggested above, cooperation with local health authorities will be a natural result. In many localities it might even prove practicable for the officer of the medical staff to serve as the local health officer. Certainly the best results can be obtained only when these two forces are co-ordinated.

Health insurance a health-promoting agency in foreign countries.—

Even under the British national insurance act, with the defects noted above, there have already been important developments. The last report of the National Health Insurance Administration (for 1913-14) showed that the new system was "touching nearly every field of human endeavor" and was "accumulating data of material importance" "in solving social problems of reform." The operation of the act has, for instance, induced physicians to locate in areas where the poverty of the people had previously made medical practice impossible except on a charity basis. Furthermore, the necessity for coordinating health agencies has already led to a comprehensive scheme of cooperation of all forces, which before were working independently, for the relief and prevention of tuberculosis. Under this system, hospitals, sanatoria and dispensaries, visiting nurses, and home treatment for tuberculosis have been brought together under the same supervision, their efficiency increased, and their benefits greatly extended. Many counties and county boroughs have adopted this comprehensive scheme.

It is in Germany, however, that the actual effects of the coordination of health promoting agencies with health insurance are to be seen. There, according to the consensus of observation and study of the workings of the "sickness insurance" system, not only has each agency for the promotion of health been rendered more efficient, but a stimulus has been given to the entire health movement in the nation as a whole. The "sickness insurance" system has stimulated and financially aided dispensaries and hospitals for consumptives, dispensaries and clinics for infants, first-aid societies, school doctors, day nurseries and care rooms for children, holiday colonies and forest resorts, people's kitchens, milk depots, and agencies for combating alcoholism.

As Ministerialrat Friedrich Zahn has summed it up:¹

By means of a carefully organized body of workingmen's insurance statistics, which indicate the course, cause, and consequences of cases of sickness, invalidity, and industrial accidents, the principal dangers which threaten the life of

¹ Workman's Insurance and Poor Relief in Germany, by Ministerialrat Dr. Friedrich Zahn, Director of the Bavarian Royal Statistical Office, Munich, Transactions of the Fifteenth International Congress of Hygiene and Demography, Washington, 1912, Vol. VI, pp. 288-289.

the workman become known, and the manner in which these evils can be most successfully attacked is made evident. There follows, in consequence, a systematic campaign against tuberculosis, drunkenness, venereal diseases, the lack of workmen's dwellings, unemployment (guaranty of sufficient work to preserve the claim to insurance by means of labor exchanges), schooling of the workmen and their families in social hygiene, enlightenment of the insured by regular lectures, etc. This campaign is being carried on in part by workmen's insurance alone, in part in conjunction with organs of public welfare.

What we gain in this way is obvious. No more merely relieved sick, injured, invalids, but persons sound in body and again capable to work. Where in the past death occurred, life is now maintained; where formerly the man became a cripple for life, he is now enabled to preserve the full use of his limbs. Thousands who would otherwise be wholly or partially incapacitated now become again industrially capable. The working population of to-day is much less exposed to the dangers of sickness, invalidity, and accident, and seems to possess greater powers of resistance; the coming generation is growing up healthier and stronger from the beginning. With the improvement of the health of the insured, there will be a postponement of invalidity, if not entire prevention of such disability. Other strata of population, too, are more completely guaranteed against contagion and brought up to a higher standard of health. This increase in vital power adds to the labor force and to the creative powers of the individual and of the nation.

MALINGERING.

While an evil which possibly can never be entirely eradicated and the importance of which should not be minimized, malingering ought not to be overestimated and used as an argument against the principle of health insurance. The extent of malingering is determined by the efficiency of the methods and regulations of health insurance designed to prevent it. In France under the accident laws the employer is compelled to pay for time lost on account of accidents and for the cost of medical treatment, while the employee is allowed to choose his own physician. Under these provisions there has resulted a combination of doctors and employees for mulcting employers.

Under the British system also, where medical referees were not provided and employees were allowed to have their family physicians sign disability certificates, the sick funds were cheated by malingerers. There can be little doubt that such conditions encourage malingering, and the fact should be given due consideration in framing health insurance laws and regulations. On the other hand, the extent to which it is occurring should not be exaggerated as has been done in the use of German morbidity statistics. For example, the average number of days of sickness per insured member per annum was 5.89 days in 1885 and 8.49 days in 1912. All of this increase has been attributed by some to malingering, losing sight of the fact that the laws have been changed during this period, extending the duration of the benefit from 13 to 26 weeks, that many workers have come to a proper realization of the rights they have in the funds, and

that, with the advance of preventive medicine, medical benefits have been greatly extended and convalescents now receive much more consideration than in former years.

It will hardly be denied that malingering in the United States is a great evil under a large number of existing plans. In the so-called establishment funds in this country, where practically all of the contributions to the funds are made by employees and where the funds are controlled by employers, the employers have little financial incentive to manage them in such a way as to lessen the evil. On the contrary, it has been found that employers in some instances manage the distribution of the benefits primarily to avoid friction with their employees regardless of whether the cost to the employee is lessened or not. Their employees, on the other hand, although supplying all or nearly all of the contributions, regard the funds as employers' funds and too often feel that malingering is a justifiable method of "getting back" what they have put in. Even in the administration of trade-union and mutual-benefit funds, charitable and friendly intentions on the part of those in charge of their administration have been found to permit laxity in disbursing benefits, which, so far as the cost is concerned, has the same effect as malingering.

Malingering, on the other hand, can be reduced to a minimum by well-directed provisions for its prevention, if experience means anything at all. Under a governmental system of health insurance, where employers, employees, and Government contribute to the fund and control it, it is to the interest and advantage of all to prevent malingering. A proper organization could be provided whereby the employees would be stimulated to report malingering in order to reduce their assessment. A system of medical referees, such as is made possible under the revised British national insurance act, removes the responsibility for signing disability certificates from the family physician and places it in the hands of a disinterested medical officer of the Government. The fact that the weekly cash benefit is materially less than the weekly wage is another factor which would tend to prevent malingering.

INCORRECT PRINCIPLES EMPLOYED IN SICK-BENEFIT PLANS.

One of the serious grounds of complaints against so-called health insurance in the United States is that insured workers are in danger of losing their contributions because of discharge, change of employment, or lapsing of membership in the organization maintaining the funds. This complaint is the result of a fundamental defect frequently found in insurance methods as employed in establishment, mutual, and union organizations. namely, that the strictly insurance

principle is confused with the investment or endowment principle. Provisions for pensions, for example, which in principle are investments, are often included in funds also providing for sickness and death insurance, thus involving different kinds of risks. Again, it has been found that some employers use funds contributed largely or wholly by their employees for compensation for industrial accidents, for which employers are responsible both in law and in fact.

The pension and accident features are so different in principle and in incidence of responsibility that they can not be included in a health-insurance system unless the funds are carefully segregated. This has been clearly recognized in European systems of health insurance, and it should be so recognized in the United States. Its lack of recognition has led, in some quarters, to unfair criticism of health insurance.

HEALTH INSURANCE IN RELATION TO RELIEF AND CHARITY WORK.

Health insurance not a charity measure.—Health insurance, in the real sense of the term, is not relief or charity. This is a distinction of fundamental importance. The cash and other benefits provided by health insurance are not bestowed or given; they are paid for in accordance with actuarial practice by those who are responsible for the conditions that occasion the need for benefits. They are not "relief" any more than compensation for accidents is "relief." Especially is this true in a governmental system of health insurance where employers, employees, and public maintain and administer the funds. In the first place, a system of this character is a public institution in which each individual retains his rights as a citizen. In the second place, it is cooperative in organization and the insured person has a share in control proportionate to his contribution. In the third place, the beneficiary does not receive the benefits as doles from charity givers, but because he has every possible right to them. There is, on the other hand, every incentive given to the worker to realize his independence and to become more self-reliant, because he is afforded a greater degree of economic security.

A preventive of the need for charity.—Health insurance can not be regarded in the light of a substitute for charity and relief work. The only sense in which the benefits afforded by health insurance may be said to supplant charity and the various forms of institutional relief is in the sense that they tend to prevent charity by saving those workers who are on the margin of want from the necessity of seeking relief in times of sickness. Health insurance will not make workers out of already unemployable persons or take out of the poorhouses, asylums, and other institutions the sick, the maimed, the idiots and imbeciles, and the alcoholics. It will not create employment for

those who are out of work. But by providing adequate medical, hospital, and surgical care, by affording funds during sickness, and by allowing a death benefit, health insurance will prevent large numbers of workers from losing their economic status and becoming unemployable. It will lessen the number of workers who are now forced to sacrifice their self-respect, their independence, and their self-reliance in appeals to charity.

"Ethical character of insurance."—Participation in support and control would give to the insured persons a sense of ownership and responsibility which would not only take away every element of charity but would educate them in self-government and materially increase their value as citizens. Such seem to have been the results in Germany, where a health insurance system has been in operation for over 30 years. Referring to the "ethical character of insurance," Ministerialrat Dr. Friedrich Zahn has thus described the results of the development of such relations in Germany:¹

Furthermore, the ethical character of insurance is not to be forgotten in this connection. The workman is not obliged to ask for this assistance as he used to beg for alms, thereby losing his social honor and certain civil rights. He can demand this aid as a well-earned right, as compensation for the contributions he has made and the services he has performed; he can demand it as a sort of official pension. His personal independence thus suffers no diminution by the acceptance of these insurance benefits. He retains all his civil rights. His personal feelings and his social pride are not injured, but rather given new strength. The legal guaranties of maintenance given him by workmen's insurance against sickness, invalidity, and old age place him in the class of those who have. Furthermore, the schooling in self-government, which is gained in the organization of insurance against sickness and invalidity, increases the capacity and desire of the workmen to do many things for their own welfare.

GOVERNMENTAL SYSTEM BEST.

Throughout the foregoing discussion of health insurance as an adequate method of dealing with the problem of sickness among wage earners, reference has been frequently made to the governmental systems in Europe, their defects pointed out, and suggestions made for a governmental system suited to American ideals and conditions. Some of the reasons for placing health insurance on a governmental rather than private basis may be summarized briefly as follows:

First, the democratic character of an effective health insurance system is most pronounced in a governmental system. The wage earner has a more real basis for feeling that the benefits he receives

¹ Workman's Insurance and Poor Relief in Germany, by Ministerialrat Dr. Friedrich Zahn, Director of the Bavarian Royal Statistical Office, Munich, Transactions of the Fifteenth International Congress of Hygiene and Demography, Washington, 1912, Vol. VI, pp. 288-289.

are rights to which he, as a citizen, is entitled. A governmental system removes all trace of the taint of charity that so often accompanies employers' welfare work and which might accompany a private plan supported in part by employers.

Second, since the public would be represented in the support and control and very largely in the administration of health insurance funds, the danger of allowing it to be a football in disagreements between employers and employees is lessened. It becomes a recognized governmental institution.

Third, certain features necessary to the success of health insurance which are obnoxious to private health insurance plans—for example, compulsory membership—are largely removed when health insurance is a public institution and a governmental affair.

Fourth, experience has shown that there is a much higher degree of efficiency in management, and at much less cost, in governmental than in private health insurance plans. Health insurance in Europe has been provided at much less cost in proportion to the benefits received than in this country. The necessity for maintaining large reserves, providing profits, paying high-salaried officers, soliciting agents, commissions, and general duplication of "overhead expense" is done away with in a governmental system.

Fifth, the cooperation with public and other health-promoting agencies, which has been pointed out to be so necessary for an effective system of health insurance, is practically impossible in any system which is not governmental.

Sixth, it is a significant fact that the experience of European nations with health insurance has shown governmental systems to be the only systems which accomplish the purposes desired. In European countries in which private health insurance plans existed, or in which there were private systems subsidized by governments, the experience has been that discouragingly small enrollment in membership resulted and that the workers who were on the border line of poverty and in the greatest need of insurance were the very ones who did not insure. Great Britain, when it adopted a system of health insurance in 1911, did not subsidize private plans, as some of the European nations had done, but advanced at one step to a highly developed form of a governmental system. Several other nations which subsidized private insurance plans have abandoned that method and have adopted a governmental system. At the last International Congress on Social Insurance, the Italians, who had held out longer than any other European nation against the principle of a governmental system, openly acknowledged dependence upon private plans of health insurance to be a mistaken policy. Governmental health insurance systems have unquestionably come to be

recognized as the most satisfactory method of dealing with the problem of sickness among wage earners.

Seventh, a governmental system of health insurance permits the use of a very practical and efficient method of collecting funds through the taxing power of government. The cost of administration is thus reduced, since already existing machinery for collection can be employed and a less complicated and elaborate organization of administration is necessary.

BASIC PRINCIPLES OF HEALTH INSURANCE ALREADY ESTABLISHED IN THE
UNITED STATES.

It must be clear from the foregoing that practically all of the basic principles of health insurance are already recognized and practiced in the United States, but not embodied in any one system or plan.

1. Health insurance, as a method of distributing the cost of sickness over a group of individuals, has long been in use in trade-union, employers' and establishment benefits, and mutual benefit organizations.

2. The compulsory principle that all members of a trade or industrial group of individuals shall belong to a sick-benefit fund is familiar in both union and employers' benefit organizations, and the objections that have been raised are not against this principle, but against the undemocratic application of it in certain instances.

3. Cooperation of employers and employees in joint contributions and in the administration of benefit funds and in other measures for the betterment of working conditions is too well known to need explanation here. Participation by the public has been established in a number of instances, notably for the purpose of defraying the cost of administering compensation laws.

4. Medical relief, death benefits, sick benefits, and hospital service are, of course, familiar features of benefit schemes, although in few instances are all of them provided in any one plan. The principle of maternity benefits is not unknown in this country and is already receiving an impetus from mothers' pensions.

5. Taxation by the Federal Government for benefits to employees has been in operation for over a century in the maintenance of marine hospitals, and the Federal Government has been a frequent contributor, in appropriations by Congress, to the Marine Hospital Service. As early as July 16, 1798, Congress enacted a law taxing all vessels of the United States merchant marine 20 cents per month for every person employed on board, and providing for authority for deducting this amount from the wages of such persons. This fund was appropriated for the relief of sick and disabled seamen and constituted the marine-hospital fund. The act was amended on June

29, 1870, by raising the assessment to 40 cents per month and extending the benefits of the Marine Hospital Service. In 1884 the capitation tax was repealed, a tonnage duty was imposed on shipping, and provision was made for maintaining the Marine Hospital Service out of the tonnage tax. The relief has been extended from time to time until its beneficiaries include practically every person connected with the United States merchant marine and the aids to navigation. The taxation of industry by the Federal Government in a health-insurance system has been thoroughly established.

A HEALTH INSURANCE SYSTEM FEASIBLE FOR THE UNITED STATES.

The conclusion appears warranted that a health insurance system for the United States or for States, similar in general principles and in methods to the best European systems, will not be so difficult nor so radical as some have thought. In fact, such a system will not so much introduce ideas and principles and practices new to this country as it will utilize existing plans and principles in a more effective way. The tendencies toward collective effort for the solution of social problems and toward cooperative action on the part of employers and employees point the way in which these elements may be brought together in a systematic manner and utilized for the promotion of the wageworker's health. The existing agencies of health insurance in trade-union, mutual benefit societies, and establishment sick benefit funds can be utilized, just as they have been utilized in Great Britain and in European countries, in a State or national system.

The real problem is thus one of organization. A more complete study of the economic and other factors that affect the health of the wage-working population of the United States, and an examination of the medical benefits and other details of health insurance systems abroad and methods and practices in this country, will afford the data and the basis necessary for effective enforcement of health-insurance laws when enacted by State or Nation.

SUMMARY AND CONCLUSIONS.

1. The fact that health insurance has been so generally adopted in European countries as a solution of the problems of the wage earner's health suggests its serious consideration in this country as a measure for the relief and prevention of sickness.

2. At present each of the 30,000,000 wage earners in the United States, according to available data, loses about nine days each year on account of sickness. Estimating the loss in wages at \$2 a day and the cost of medical attention at \$1 a day, the total loss to the wage

earners of the nation is approximately three-quarters of a billion dollars annually.

3. In addition to conditions which affect the health of the population as a whole, some of the most important economic factors which increase the health hazard of the wage-working population are: (a) Occupational hazards; (b) irregularity of employment; (c) unhealthful conditions of living; (d) employment of women under modern conditions of work, particularly of married women; and (e) economic disadvantages at which a large proportion of wageworkers (particularly the unskilled) and their families are placed as the result of low wages and insufficient annual income.

4. Underlying all of the economic factors is the fact of poverty and the partnership of poverty and disease.

5. Three groups—employers, the public, and employees—are responsible for conditions causing sickness among wage earners and their families.

6. With few exceptions, the responsibility of employers for the health of employees is limited to places of employment and working conditions.

7. The public is responsible for community conditions or conditions common to all classes of citizens.

8. The greatest share of responsibility rests upon the individual wage earner. Under present conditions a large proportion are unable to meet this responsibility, especially the unskilled, low-paid workers.

9. The inability of the wage earner to meet the cost of sickness places a serious handicap upon the medical profession in its efforts for the relief and prevention of disease.

10. There is an increasing need for a more effective method of dealing with the problem of the wage earner's health—one which will place the burden of responsibility where it belongs and stimulate the cooperation of all concerned in its solution.

11. Health insurance is the most feasible measure, because (a) it is a method by which the cost of sickness is distributed among those responsible for conditions causing sickness and whereby the burden upon the individual is lightened, and (b) it gives a financial incentive for the prevention of sickness to those who are responsible for conditions causing sickness.

12. Health insurance in its most highly developed form (a) provides for adequate cash and medical benefits to all wage earners in times of sickness; (b) distributes the cost among employers, the public, and wage earners according to their responsibilities; (c) becomes an effective health measure by stimulating the cooperative effort of the three responsible groups and by linking their efforts with those of national, State, and local health agencies; (d) correlates all

the forces at work in the prevention of disease; and (e) affords a better basis for the cooperation of the medical profession.

13. Under an efficient health-insurance system a contribution of approximately 50 cents per week per insured person (25 cents by employees, 20 cents by employers, and 5 cents by Government) should enable the insured person to receive (a) \$7 per week when disabled on account of sickness or nonindustrial accident for a period as long as 26 weeks in one year; (b) adequate medical and surgical care during disability; (c) medical and surgical care of wife of insured person during confinement; (d) a death benefit of \$100. Budgetary studies of large numbers of workingmen's families show that many workers pay as high as 90 cents per week and receive little more than actual funeral expenses.

14. A governmental system of health insurance can be adapted to American conditions, and when adapted will prove to be a health measure of extraordinary value.

The fact that under such a system the employee has such a large measure of ownership and control will remove all elements of paternalism. The employee will then regard the benefits as rights, not charities.

Adequate medical relief will be placed within the reach of even the lowest-paid worker and provide for him and his family during sickness.

It will give to those responsible for conditions causing sickness a financial incentive to prevent disease.

Its administration must be closely coordinated with public-health agencies if it is to attain the greatest degree of success as a preventive measure.

APPENDIX I.

BRITISH AND GERMAN HEALTH-INSURANCE SYSTEMS.

The principal features of the German and the British national health-insurance systems are given in the following outlines, the chief points being arranged in such a way as to facilitate comparison of the two systems:

The German sickness insurance system.—The German sickness insurance system has been in operation since 1883, and may properly be considered as thoroughly typical of the systems of social insurance in Europe. Its fundamental features, as shown in the 1911 code, so far as they provided for sickness insurance, may be outlined briefly as follows:

1. Insured persons:

(a) Members: All workmen, helpers, journeymen, apprentices, persons engaged in home-working industries, and servants are compelled without regard to income to be insured; all other persons employed and earning 2,500 marks (\$595) a year or less.

(b) Voluntary members: Any person whose income is 4,000 marks (\$952) a year or less.

2. Contributions to funds:

(a) By whom: Insured persons contribute two-thirds; employers contribute one-third.

(b) The cost of supervision is borne by the Imperial and State Governments.

(c) There is no limit fixed for contributions by the law, but one is implied in the statement that they may not be raised above 4½ per cent of the basic wage except under unusual conditions.

(d) Collections of contributions: Employers are held responsible for all contributions of their employees, with the privilege of deducting the employees' share from wages.

3. Benefits:

(a) The law specifically states that "the benefits are not public charities." The rights to benefits begin with membership.

(b) Medical benefits include medical care, medicines, and appliances in home, hospital, sanatorium, and office as required, but they are limited to 26 weeks in one year. These benefits are administered by local societies, which contract with one or more physicians and hospitals.

(c) Cash benefits: Beginning with the fourth day of disability, one-half the basic wage is paid for each working day, not to exceed 26 weeks in one year. When sent to hospital, the cash benefit is stopped unless it is required for support of dependents.

(d) Maternity benefits: Benefits equal to the cash benefits described above are provided for insured persons or wives of insured persons during confinement

for a period of 8 weeks, of which 6 must be after delivery, and may be extended to 12 weeks if mother nurses child. The same cash benefits are provided for 6 weeks for disability incident to pregnancy.

(e) Funeral benefits: Benefit equal to 20 days' pay at the basic day wage.

4. Administration: In general, the whole system of social insurance, which includes not only sickness insurance but also accident and invalidity, is provided for in a single code.

(a) There is a governmental supervisory system consisting of (1) the imperial insurance office; (2) the superior insurance office, for districts roughly corresponding to our judicial districts, which may or may not include an entire State; (3) the Local Insurance Office, for districts which roughly correspond to our county or large city. This supervisory system is governmental, although each of the three kinds of offices are composed of representatives of the Government, the employers, and the employees.

(b) The actual administration of the funds is left to local organizations called "funds," which are "local," "rural," "establishments," "guild," and "miners." The membership of these "funds" is composed of the insured persons, and the management is in the hands of directorates composed of one-third employers and two-thirds insured persons.

(1) Whenever the employers contribute as much as one-half of the funds, they are entitled to one-half representation in the directorate.

(2) Provision is made for federations of "funds" for the purposes of establishment of hospitals, sanatoria, convalescent homes, and other purposes to lessen overhead expenses.

The British system.—The British national insurance act was passed in 1911, prior to which voluntary insurance systems were prevalent. The fundamental features of the health-insurance system it provided may be outlined as follows:

1. Insured persons:

(a) Members—all persons 16 years of age and over who are employed, whether in factory, on farm, in domestic service, or in any capacity whatever for which wages are paid, without regard to income.

(b) Voluntary members—any person whose income is £160 (\$778.64) a year, or less, may insure if not over 65 years of age.

2. Contributions to funds:

(a) By whom: Insured persons contribute four-ninths; employers contribute three-ninths; Parliament contributes two-ninths.

(b) In the case of females and persons employed at low rates of wages the proportion of contributions by employers and Parliament is increased, and the proportion paid by employees decreased, until in some cases the employees contribute nothing.

(c) The cost of administration is borne by the entire fund.

(d) The limit fixed by law upon contributions: In no case can the employer be compelled to pay more than 6d. (12 cents) per week per employee, nor the employee be compelled to pay more than 4d. (8 cents) per week.

(e) Collection of contributions: By a system of stamps sold by the Government.

3. Benefits:

(a) The rights to benefits begin after 26 weekly payments have been made.

(b) Medical benefits include medical care, medicines, and appliances in home, hospital, sanatorium, and physician's office as required. These benefits are administered by the local government committee.

(c) Cash benefits: Beginning with the fourth day of disability, payments of a sum of not more than 10s. (\$2.43) a week, not to exceed 26 weeks in one year.

Disability benefits are paid at reduced rates for disability which continues for over 26 weeks. When sent to hospital the cash benefit is stopped, unless it is required for support of dependents.

(d) Maternity benefits: A maternity benefit of 30s. (\$7.50) is paid in case of confinement to the wife of an insured person. In the case of employed married women the maternity benefit is paid in addition to the cash benefits.

(e) No funeral benefits are provided.

4. Administration. The British act does not provide for death benefits and the administration is:

(a) National: This is of an executive, supervisory, and advisory character.

(1) National Insurance Commission, appointed by the Government; the number not limited, but one member must be a medical practitioner; has power to make regulations to govern all insurance administration.

(2) Advisory committee, appointed by the commission, composed of representatives of employers' associations, "approved" societies of employees, medical practitioners, and other persons, two of whom must be women.

(b) Local:

(1) Local insurance committees in each county or county borough composed of 40 to 80 members, three-fifths of whom represent insured persons, one-fifth appointed by the council of the county or borough, of which two must be women, from one to three medical practitioners, and the remainder appointed by the National Commission. These committees administer the medical benefits, keep the records, and promote measures for the prevention of disease.

(2) "Approved" societies: Any society or organization may be recognized as an administrative agency if it conforms to certain requirements laid down by the National Commission, and as an "approved society" administers sickness, disability, and maternity benefits.

(3) "Deposit members" include those who are not members of approved societies; sickness and other benefits for these members come from the post-office fund, and are administered by the local insurance committees. The provision for "deposit members" is limited by the act to January, 1916.

APPENDIX II.

TYPICAL SICK-BENEFIT FUNDS IN THE UNITED STATES.

The principal features of three typical sick-benefit funds in the United States (a mutual fund, an establishment fund, and a trade-union fund) are given in the following outlines, the chief points being arranged in such a way as to facilitate comparison with the outlines of the German and British national health-insurance systems (see Appendix I):

The Workmen's Sick and Death Benefit Fund of the United States of America.—This fund was founded in 1884 for the purpose of providing benefit payments in case of sickness and death and may be considered typical of its kind.

1. Insured persons: Any workingman in good physical condition, able to read and write English or German, and not under 18 or over 45 years of age, and their wives and unmarried daughters not under the age of 18 or over 45.

2. Contributions to fund by entrance fees and assessments:

(a) By all members.

(b) Entrance fee, \$4 to \$1, according to class, the first and second classes consisting of males and the third class of females.

(c) Assessments: \$1, 75 cents, and 25 cents, according to class, the number of assessments per month to be fixed according to the number of cases of death and sickness.

3. Benefits:

(a) The right to benefits begins on the first day of the month following admission to membership.

(b) No medical or maternity benefits.

(c) Cash benefits begin with date of medical certificate:

(1) Sickness: To members of the first class, \$9 a week for 40 weeks and \$4.50 for 40 weeks thereafter; to members of the second class, \$6 a week for 40 weeks and \$3 a week for 40 weeks thereafter. No sick benefits are paid to members of the third class (women). No benefits are paid for more than 80 weeks during the entire membership.

(2) Sickness certified by a physician; beneficiaries under control of visiting committee and a physician and are examined weekly by the physician.

(d) Death benefits to beneficiaries of members of all classes not to exceed \$250, the right to benefit beginning on the first day of the month following admission to membership.

(e) Forfeitures: For nonpayment of dues, fraud, drinking alcoholic liquors while on sick list, and for several minor reasons.

4. Administration: The administration of the fund rests finally with the national board.

(a) National: Officers, together with a board of directors, elected annually by ballot. The board fixes the dues and decides all appeals.

(b) Local: Local organization includes a board and other officers for the local administration. Appeals from local organizations may be taken to the national board.

A Typical Railroad Fund.—This fund has been in operation for over 35 years. Its main features are as follows:

1. Insured persons: The plan is compulsory for all except a very few classes of employees. Over 90 per cent of all employees are included in the compulsory classes.

2. Contributions to fund:

(a) By whom: Employees contribute, according to income, from 75 cents to \$5 per month. The company guarantees the fund and pays a sum equal to about 50 per cent of the expenses of administration.

(b) Contributions of employees are deducted from pay roll for each month in advance.

3. Benefits:

(a) The rights to benefits begin after six months' employment.

(b) No medical benefits.

(c) Cash benefits:

(1) Accident benefits begin with first day of disability, 50 cents to \$2.50 per day (not including Sundays), according to contribution, for the first 52 weeks, and half the above benefits for the second 52 weeks.

(2) Sickness benefits begin after the first week of disability, 50 cents to \$2.50 per day (not including Sundays), according to contribution, for the first 52 weeks, and half the above benefits for the second 52 weeks.

(3) The certificate of disability in case of accident or sickness must be signed by the medical officer of the company.

(d) Funeral benefits:

(1) Accidental death—\$500 to \$2,500, according to contribution.

(2) Death due to sickness—\$250 to \$1,250, according to contribution.

(c) Forfeitures: The right to all benefits, except death benefits, in cases of death due to sickness is forfeited on leaving employment of company and in all cases where suit is brought against the company by beneficiary.

4. Administration: Is in the hands of the company and of an operating and an advisory committee, which is composed of representatives of company and employees.

(a) Executive: The company assumes general charge of the fund, the president of the railway appointing the executive officers.

(b) Advisory committee, composed of general manager of railway and 12 members elected by employees, has advisory functions and hears appeals which may be appealed to operating committee.

(c) Operating committee, composed of three members appointed by railway president and three members elected by employees, makes regulations subject to the approval of the railway president and board of directors, and hears all appeals from superintendent of the fund and the advisory committee, its decisions being final.

The Boot and Shoe Workers' Union.—This union, organized in 1895, inaugurated temporary disability and death benefits in 1900.

1. Insured persons: Includes all members of the union.

2. Contributions to funds: Are to the general union fund for all purposes.

(a) By all members of union.

(b) One-third of all receipts is paid into the benefit fund until it equals \$1 per member.

(c) \$2.32 was paid per member for disability benefits in 1913.

3. Benefits:

(a) The rights to benefits begin after six months' membership in union.

(b) No medical or maternity benefits.

(c) Cash benefits:

(1) Temporary disability (sickness) begin after the first week of disability, \$5 per week for 13 weeks in any one year.

(2) Disability certified by a committee of three members of union.

(d) Death benefits according to length of membership, \$25 to \$100.

(e) Forfeitures: The right to all benefits is forfeited by forfeiture of membership in the union.

4. Administration: The funds of the union are administered by the general executive board of the union and eight other members.

APPENDIX III.

HEALTH-INSURANCE STANDARDS.

[Recommended by the Committee on Social Insurance, American Association for Labor Legislation.]

After many conferences for discussion and revision of proposals, the committee on social insurance of the American Association for Labor Legislation formulated in the summer of 1914 a tentative statement of the essential lines which it purposes to follow in the drafting of a health-insurance bill. The statement was as follows:

1. To be effective health insurance should be compulsory, on the basis of joint contributions of employer and employee and the public.

2. The compulsory insurance should include all wageworkers earning less than a given annual sum, where employed with sufficient regularity to make it practicable to compute and collect assessments. Casual and home workers should, as far as practicable, be included within the plan and scope of a compulsory system.

3. There should be a voluntary supplementary system for groups of persons (wageworkers or others) who for practical reasons are kept out of the compulsory system.

4. Health insurance should provide for a specified period only, provisionally set at 26 weeks (one-half a year), but a system of invalidity insurance should be combined with health insurance so that all disability due to disease will be taken care of in one law, although the funds should be separate.

5. Health insurance on the compulsory plan should be carried by mutual local funds jointly managed by employers and employees under public supervision. In large cities such locals may be organized by trades with a federated bureau for the medical relief. Establishment funds and existing mutual sick funds may be permitted to carry the insurance where their existence does not injure the local funds, but they must be under strict government supervision.

6. Invalidity insurance should be carried by funds covering a larger geographical area comprising the districts of a number of local health insurance funds. The administration of the invalidity fund should be intimately associated with that of the local health funds and on a representative basis.

7. Both health and invalidity insurance should include medical service, supplies, necessary nursing, and hospital care. Such provisions should be thoroughly adequate, but its organization may be left to the local societies under strict governmental control.

8. Cash benefits should be provided by both invalidity and health insurance for the insured or his dependents during such disability.

9. It is highly desirable that prevention may be emphasized so that the introduction of a compulsory health and invalidity insurance system shall lead to a campaign of health conservation similar to the safety movement resulting from workmen's compensation.

APPENDIX IV.

RECOMMENDATIONS AS TO HEALTH INSURANCE.

[From the staff report to the United States Commission on Industrial Relations.¹]

It is suggested that the commission recommend a Federal system of sickness insurance, constructed along the lines here briefly summarized:

1. **Membership:** The membership shall comprise all employees of persons, firms, companies, and corporations engaged in interstate commerce, or whose products are transported in interstate commerce, or which may do business in two or more States, the employees of intrastate establishments to be permitted to be insured, if they so elect, under regulations to be prescribed by the commission.

2. **Fund:** The fund is to be created by joint contributions by employees, employers, and the Government, the last named sufficient for expenses of administration. Such contributions should probably be in the proportion of 50 per cent from workers, 40 per cent from employers, and 10 per cent from the Government. Individuals or groups desiring larger benefits may arrange to make larger payments, and the rate in any trade, industry, or locality may be reduced where conditions so improve as to make a lower rate adequate. The contributions are to be secured through taxing each interstate employer a certain amount weekly for each employee, the part contributed by workers to be deducted from their wages, thus using the regular revenue machinery of the Government.

3. **Benefits:** Benefits to be available for a limited period in the form of cash and medical benefits during sickness, nonindustrial accidents, and childbearing; death benefits to be of limited size and payable on presentation of proper evidence.

4. **Administration:** The administration of the insurance funds is to be carried out by a national sickness insurance commission. The national commission should be composed, by presidential appointment with Senate confirmation, of a director (who would be chairman), representatives of employers and representatives of employees in equal ratio, and, as ex officio nonvoting members, the Federal Commissioner of Labor Statistics and the Surgeon General of the Public Health Service. The commission should be empowered to supervise all funds and determine their character and limits of jurisdiction; promulgate all regulations necessary to enforce the act; establish and maintain hospitals; maintain staffs of medical examiners, specialists, dentists, and visiting nurses; provide for medicines and appliances; make contracts with local physicians; cooperate with local funds and health authorities in disease prevention; and provide for collecting actuarial data.

¹ Final Report of the Commission on Industrial Relations, 1915, pp. 206-207.

Correlation of the insurance system with the medical profession, the lack of which has been a serious defect in German and British systems, is absolutely necessary. Contracts with physicians should allow to each a per capita payment for the insured persons under his care, the right of selection of physician to be retained by the insured. For the signing of certificates entitling the insured to benefits and for treating the insured in hospitals the Surgeon General should detail physicians from the Public Health Service, their entire time to be given to these and other duties (consulting with local physicians, enforcing Federal laws and regulations, and cooperating with local authorities).





